Uptrend in Sales, Profits—p. 35

JANUARY 1961

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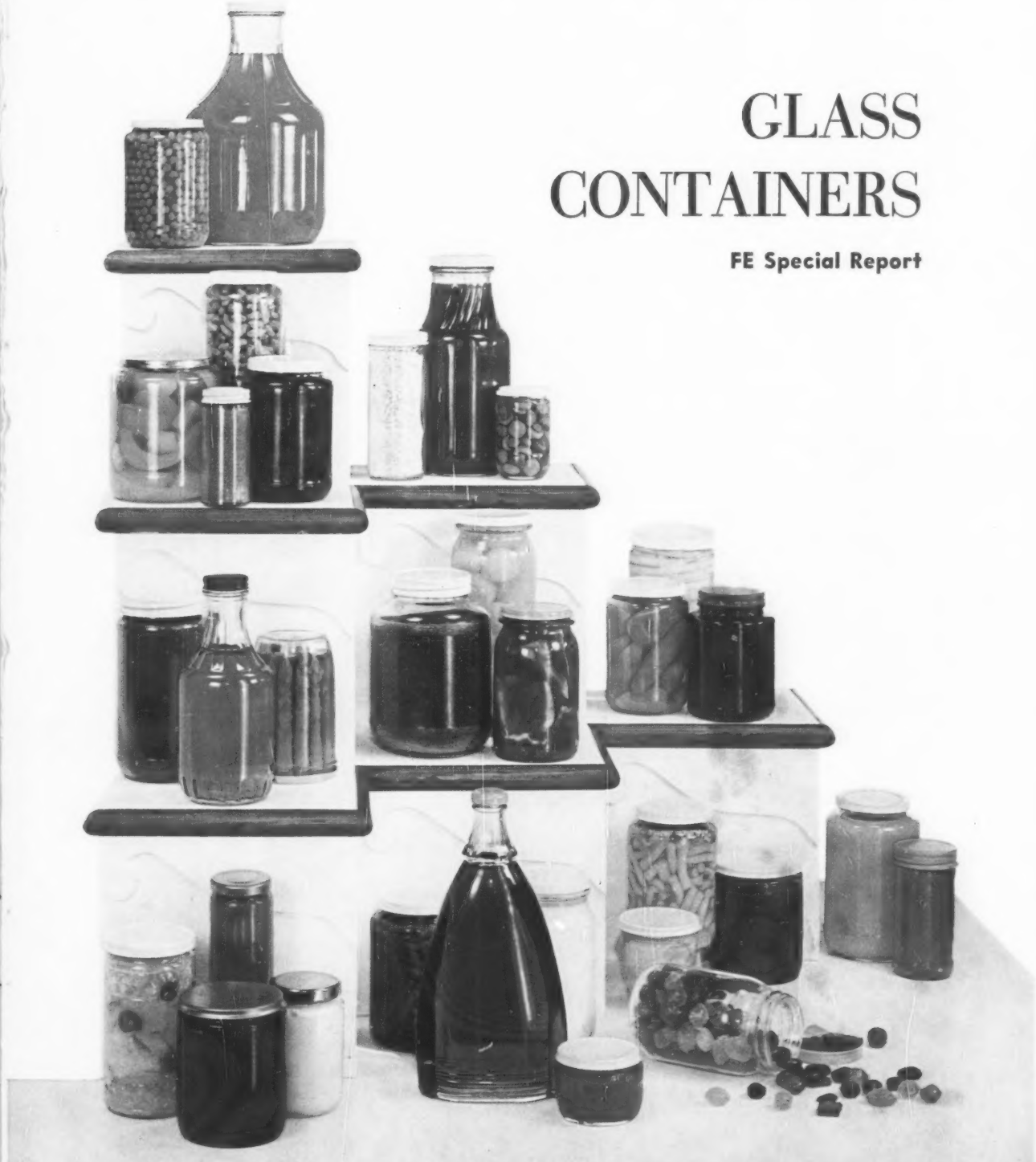
FOOD ENGINEERING

BETTER MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

A CHILTON PUBLICATION



GLASS CONTAINERS

FE Special Report

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MAGGI'S®

HYDROLYZED PLANT PROTEINS

improve MEAT, FOWL, SEA FOOD flavors with substantial savings

Here at last is a series of flavor contributors that often taste more like the original than the original itself. Newly developed but already proven in extensive production use, Maggi's Hydrolyzed Plant Proteins offer unusual clarity of flavor, intensify desirable flavor characteristics and provide a cleaner taste generally.

Produced by a unique process, Maggi's bulk hydrolysates are completely dependable — always uniform and unchanged by processing methods — and lack the typical flavor normally associated with hydrolyzed plant proteins.

Maggi's fills a long-felt need in the food industry, offering substantial savings along with its many other advantages. In beef products, for example, Maggi's Type 4-BE can replace a considerable amount of beef extract while imparting a cleaner, clearer, meatier flavor.

Whatever your formulation — in beef, veal, pork, fish or fowl — Maggi's Hydrolyzed Plant Proteins will enhance its flavor and lower your costs. The technologists who developed Maggi's will be glad to assist you with your formulations.

Write for free samples and data to: The Nestlé Company, Inc., Bulk Division, White Plains, N. Y.

REPLACE COSTLIER MATERIALS in beef products with Types 4-BE and 4-BE2; flavor is always cleaner, clearer, meatier, unchanged by processing; doesn't vary in quality, uniformity, taste.

FOWL AND SEA FOOD BENEFIT from the unique properties of Type 3H-3. Light in color and light in flavor, it offers fowl and sea food products the advantages of cleaner and clearer taste.

CLEANER AND CLEARER FLAVOR in pork and veal products with Type 3H-1; lighter colored, medium strength meaty background; enhances but does not intrude on flavor of end product.

MAGGI'S HYDROLYZED PLANT PROTEINS AVAILABLE IN LIQUID, PASTE OR POWDER

Prepared by the makers of world famous **MAGGI'S®** *seasoning*

THE NESTLÉ COMPANY, INC.
WHITE PLAINS, N. Y.

CIRCLE 2 ON READER SERVICE CARD

FOOD

BETTER MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

A CHILTON PUBLICATION
VOL. 33 NO. 1

January, 1961

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SPECIAL FE REPORT

Fighting against rising packaging competition, suppliers offer food processors new and imaginative ideas in glass design, construction, appearance, and versatility. Better closures, too. —p. 61.

WILL THE RUSH TO POLY-UNSATURATED OILS COST YOU SALES?

Consumers are becoming highly conscious of the benefits of poly-unsaturated fats in the foods they eat.

This is no food fad. It's a definite, established trend: one that's based on sound health reasons . . . one that's just beginning to make its impact felt.

If you use fats or oils in the foods you process or package, *now* is the time to analyze the effect this trend will have on your sales.

CHECK SAFFLOWER OIL NOW!

Now is the time to consider the advantages you get from PVO Safflower Oil — the versatile oil with a higher poly-unsaturated content than any other vegetable oil available.

Check these advantages:

- ✓ **76.5% Linoleic Poly-Unsaturates (Only 10.5% Saturates)**
- ✓ **A Ratio of 7.6 to 1—Poly-Unsaturates to Saturates**
- ✓ **Bland Flavor**
- ✓ **High Smoke Point**
- ✓ **Long Cold Test**

Write today — or contact your PVO broker — for all the information on Safflower Oil by PVO process.

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DAY

Pneumatic Conveying & Bulk Storage News

FREE! 2 valuable guides for selecting PNEUMATIC CONVEYING and BULK STORAGE TANKS

BULLETIN M-588—12 page DAY pneumatic conveying guide just off the press. Discusses types of systems, illustrates and diagrams high and low density arrangements, shows equipment and tells "why" and "wherefore" of all types of pneumatic conveying including so-called fluidizing systems.

BULLETIN 574—12 pages, describes horizontal and vertical storage tanks. Points out savings and is filled with photos of various installations plus description of auxiliary equioment.

Whatever your pneumatic conveying or bulk storage problem, look first in these DAY bulletins. They are valuable aids in selecting and ordering the right equipment for your plant. For your free copies use reader service card of this magazine or write direct toDAY.

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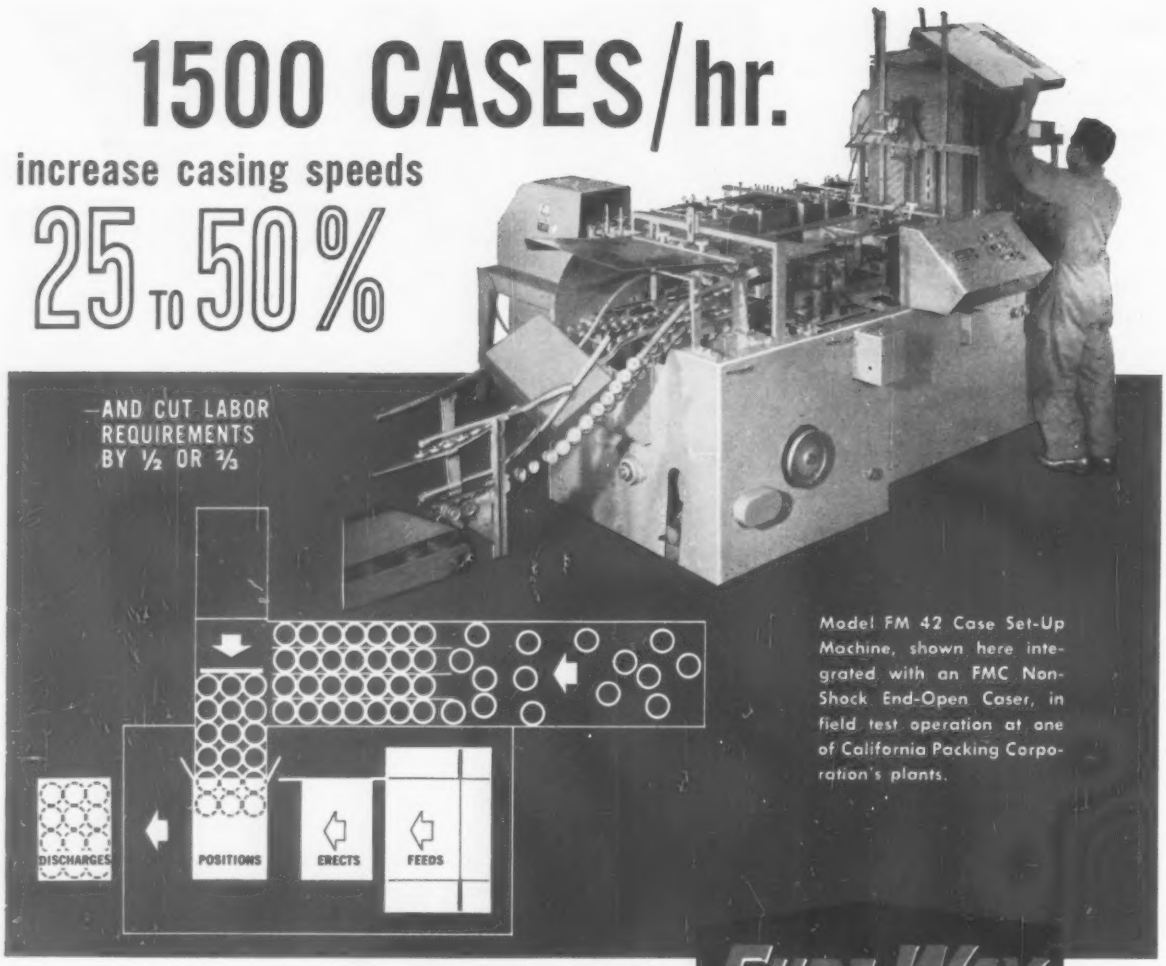
1500 CASES/hr.

increase casing speeds

25 TO 50%



Model FM 42 Case Set-Up Machine, shown here integrated with an FMC Non-Shock End-Open Caser, in field test operation at one of California Packing Corporation's plants.

—with the NEW SURE-WAY®

CASE SET-UP MACHINE

If you have either an FMC Non-Shock Caser for cans, or a "Sure-Way" Package Caser, consider the additional speed, efficiency and savings in operator manhours now available to you with the new, *fully-automatic "Sure-Way" Case Set-Up Machine.*

Under present conditions, if you are operating your caser in the area of 1200 cases an hour, you are probably using two or three operators to set up and feed cases to the machine. *Add a "Sure-Way" Case Set-Up Machine and experience these benefits:*

- *Up production to 1500 cases an hour*
- *Reduce manpower by 1 or 2 men*

The only manual function involved is that of placing flat shipping cases in the feed magazine of the Set-Up Machine—it's as simple as that. In fact, one man can easily attend two automatic lines at the same time.

An extremely versatile unit, this machine can be made to handle top, side or end-open cases as large as 25″ x 24″ x 18″, or as small as 7″ x 7″ x 3″—and given ranges between these extreme limits. Moreover, it is easily adapted and integrated to existing caser installations, and in many instances may be furnished with a "Sure-Way" Case Sealer for a fully integrated operation.

Get full information on this precision engineered equipment today—for more profitable casing operations tomorrow.

See the "Sure-Way" Case Set-Up Machine at the National Canners Show, January 22-25 in Chicago—Booth No. 1.

Putting Ideas to Work

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

Canning Machinery Division

General Sales Offices:

WESTERN: SAN JOSE, CALIF. • EASTERN: HOOPESTON, ILL.

TRENDS & FORECASTS

Sales by food manufacturers will be up 5.3% in '61, FE survey indicates. Profits will rise 5%; capital spending, 13.2%. Expenditures will be 9.4% higher for advertising; 6.7% for technical research; 4.4% for market research.

Washington economists expect Kennedy to step up rate of government spending to stimulate business. And they foresee sales and employment picking up in 2nd quarter. But unemployment will be boosted by 1.3 to 1.5 million youths leaving school this year.

Predicted 13% drop in auto production challenges food manufacturers. With consumer income expected to remain high, less spending for durables could up expenditures for food.

Upturn in size of baby crop is forecast in '61 by government economists. Number of marriages increased in '59 and '60.

Per capita food consumption in '60 averaged 1,488 lb., USDA reports. Dairy products led with 414 lb. Fruits and vegetables were next at 409 lb., not counting 108 lb. of potatoes. Meat consumption was 178 lb.; flour and cereal products, 146; sugar and syrup, 108; fats and oils, 67; eggs, 41; coffee, tea, and cocoa, 17.

Retail food store sales were 5% higher in October than year earlier.

Demand for food will increase 40% by '75, while population rises 30%. So predicts B. D. Graham, Heinz vice-president.

Number of scientists and engineers employed by food and kindred products industries increased 5.1% to 10,200 between '58 and '59. Industry employs 4,100 engineers, 3,900 chemists, 1,100 agricultural scientists and 500 biological scientists.

Food processed and patrons served by frozen food locker and freezer provisioning firms have increased 50% in decade. Value of food doubled in 5 yr. to $550 million.

Frozen peach pack jumped almost 40% in past season to 65,749,227 lb. More than half of pack was in 30-lb. tins.

Commercial fish catch for '60 is put at 5-yr. average by Dept. of Interior. It will be about 200 million lb. under '59 mark of 5.1 billion lb.

Production of winter vegetables will be down 3%, USDA predicts. Largest decreases will be in celery, artichokes and beets.

Apple production dropped in '60. Winter varieties were off 11%; fall varieties, 19%; summer, 21%—according to USDA.

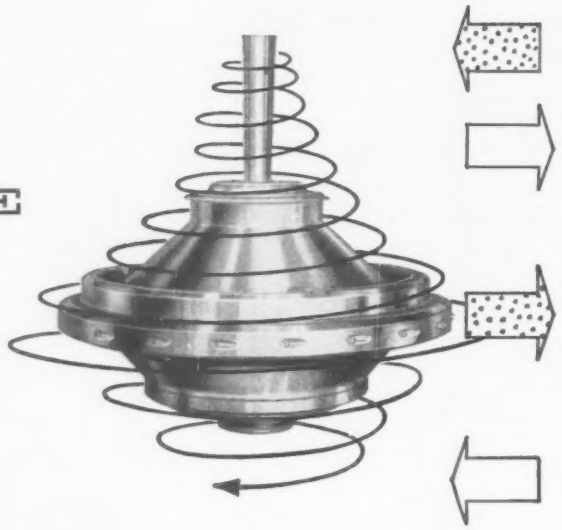
See Developments to Watch p. 15

Process Trends from DORR-OLIVER

A SERVICE TO THE PROCESSING INDUSTRIES

THE CENTRIFUGE TAKES OVER

A long-neglected equipment item is developing into a giant that is starting new trends in processing operations



Although the centrifuge has been with us for a long time, its full potentialities are only now being realized in the processing field. Partly, this is due to the increasing demand for faster, more precise methods of separation and classification, adaptable to continuous, automatic operation. More particularly, it is due to radical new developments in the centrifuge itself.

Centrifuges have now become so versatile in operation and have advanced so much in size, power and capability that opportunities for profitable application are virtually unlimited. They are replacing filters, settling tanks, screening and other separation and classification equipment. In many cases, they are cutting days off processing time. Important, too, since the centrifuge substitutes horsepower for size, is the greatly reduced floor space requirements and the smaller amount of critical material needed when handling highly corrosive solutions.

Dorr-Oliver has taken a leading part in the development of these newer, more versatile and more powerful units. An example is the high speed, high pressure Merco® centrifuge for operation at elevated temperatures. A successful application is in separating the catalyst from the polymer in the production of the new high density polyethylene.

Features of Dorr-Oliver design are the overhead bearing and drive which remove some of the limitations of conventional units and the revolutionary return flow principle that permits concentrating, washing, clarifying, classifying and recovery of soluble values at pressures up to 150 psi. Probably the largest centrifuge now in operation is a Merco unit. Rotor speeds up to 3300 rpm and capacities up to 600 gpm are possible. Smaller size, specialized units, among them the Mercone® Screening Centrifuge, are finding application in the food and pharmaceutical industries.

To those interested in the possibilities of centrifugation, Dorr-Oliver offers a wealth of information. For investigation and evaluation, pilot plant models are offered on a sale or rental basis. Just drop a line to Dorr-Oliver Incorporated, Stamford, Connecticut.

Dorr-Oliver offers a wide range of equipment, methods and complete systems for the processing industries. Operations include:

ROASTING • DRYING • CALCINATION • CLASSIFICATION • THICKENING • SCREENING • FILTRATION • CLARIFICATION • WASHING • AGITATION • CENTRIFUGATION • ION EXCHANGE • PUMPING

Schedule of Events

January

22-25—Canning Machinery & Supplies Assn., '61 Show, Conrad Hilton Hotel, Chicago.
23-26—Plant Maintenance & Engineering Show, International Amphitheater, Chicago.
23-26—United Fresh Fruit & Vegetable Assn., meeting, New Orleans, La.
29-F1—Super Market Institute, mid-year meeting, American Hotel, Miami Beach, Fla.

February

10-12—Institute of American Poultry Industry, conference, Municipal Aud., Kansas City, Mo.
13-15—USDA Research Advisory Committee on Refrigerated and Frozen Products, Washington, D. C.
13-16—15th International Heating & Air Conditioning Exposition, Amphitheater, Chicago.
16—Dairy Products Improvement Institute, Inc., 14th annual meeting, Hotel Governor Clinton, NYC.
22-24—Materials Handling Institute Pacific Coast Show and 6th Annual Materials Handling & Packaging Conference, Cow Palace, San Francisco.

HORS D'OEUVRES

The Astronaut will travel in a biopack capsule that includes all systems necessary to maintain life and the man. There will be a variety of foods, but no milk. It is a "high-residue food." Man, that's bad in a cramped capsule.

USDA announces a research grant of $50,000 to British Food Manufacturing Industries Research Assn. at Leatherhead. Wouldn't we be wise to stop giving our gold away ere Fort Knox becomes a ghost tomb?

Railway Express is hauling 1½-ton loads in semi-trailers hooked behind inter-city busses. Bussy-back transportation we have yet.

A Des Moines candy firm operates a "birthday club." It sends boxes of chocolates to employees of member companies on appropriate days. How sweetly profitable.

The new color additives amendment encompasses more than a quarter of a million items. Nice mess to enforce! But few tears are being shed for FDA.

Ancient history is replete with accounts of international policies being swayed by the tides of nations' sugar industries. Seems Castro is trying to update history.

A million tourists a year are expected to visit the beautiful gardens at the new Anheuser-Busch plant in Florida. The beer that will make Florida famous?

Farmers have more than 10 million sheep scattered over vast areas of Australia. So they bell the sturdiest of each flock with a tiny radio transmitter. Periodic "bleeps" indicate in what orbit the flock is roaming.

stops sticking

speeds packaging

cuts cleanup

saves money

SLIPICONE

silicone release agent

"wherever sticking is a problem"

SLIPICONE® goes on in a breeze . . . makes any surface slick . . . keeps adhesives, packaging materials and foods from sticking or piling up where you don't want them . . . keeps equipment cleaner, more sanitary . . . assures neat, attractive packages and labels.

SLIPICONE is nontoxic . . . safe to use in contact with all foods. Stays effective over a broad temperature range . . . from 40 below to 400 above zero!

SPRAY OR WIPE IT ON

SLIPICONE comes in four handy sizes: 12 oz. aerosol can; 2 and 8 oz. tubes; 10 lb. can . . . all economical to use.

Get SLIPICONE from your paper merchant, packaging materials supplier, or write Dept. 3713 for name of nearest distributor.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

GRADE
COLOR
SHADE

The original Mr. Gross

If it's a new idea in shipping containers, the man they call 'Mr. Corrugated' probably had a hand in it.

TO TED GROSS, originality comes as naturally as breathing.

Ted has been applying his inventive gifts to corrugated box users' needs for 26 years. Currently he's Technical Advisor of Union-Camp's Box and Board Division. *Creative Director* might be a better description. Because Ted actually coordinates all the activities that go into the developing, designing and testing of a new corrugated container.

Remember the famous "V-Boxes" in World War II? They were developed when Ted was President of Container Laboratories. A task force under his direction worked closely with a special committee of the Fibre Box Association to produce the original wet-strength corrugated box. This development enabled military supplies to withstand the wet conditions of amphibious landings.

The widespread use today of lightweight, low-cost *produce* boxes also owes much to Ted's ingenuity. As Chairman of the Citrus Container Institute, he pioneered in developing corrugated boxes for shipping citrus fruits. The knowledge gained in this area has led to the widespread use of corrugated for shipping a variety of fresh produce—safely and economically.

Look at the instruments in our photograph. They're the special box gauges now being adopted as the standard for measuring the inside dimensions of a corrugated container. You guessed it. Another Ted Gross "first."

The original Mr. Gross' latest project is field testing new types of *bulk* boxes. They'll be used primarily for shipping granular products in lots weighing thousands of pounds. Imagine the savings this will effect over conventional handling methods!

What can Ted Gross and his staff mean to you in terms of greater shipping efficiency and economy? It costs nothing to find out. Union-Camp's comprehensive packaging service is available to all shippers. It includes equipment analysis, box design and development, specifications control, merchandising counsel and in-plant surveys of your materials handling operation.

A note on your letterhead will bring a prompt response. Why not write us today?

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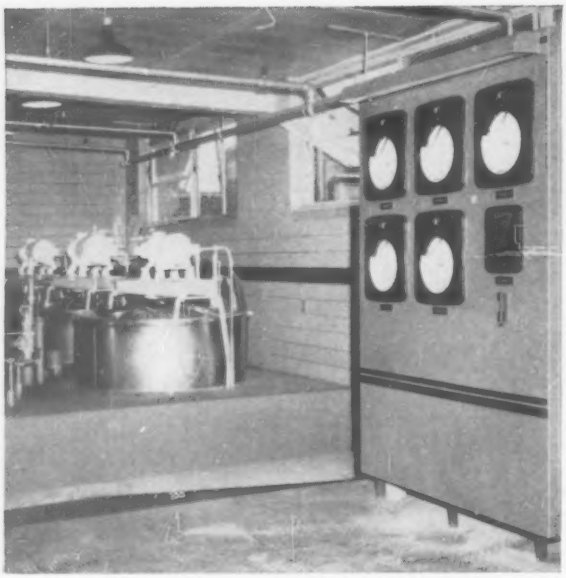
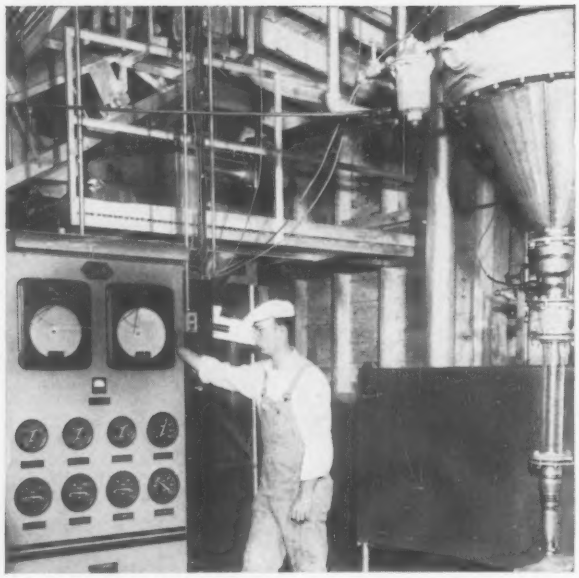
The Eastern Box Company, Baltimore, Maryland.



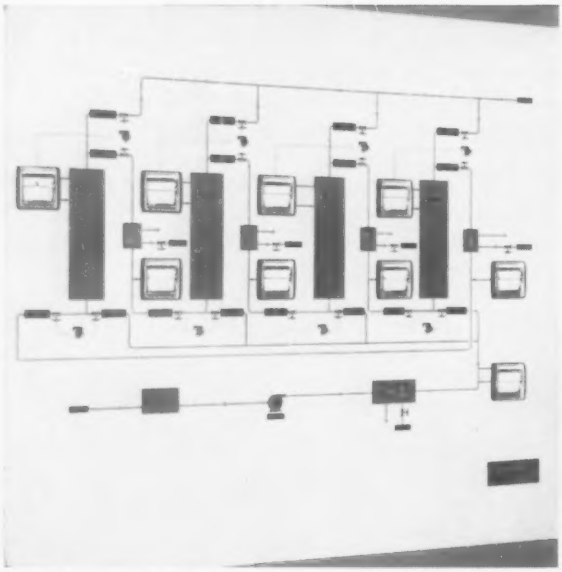
MILK PROCESSOR — TENNESSEE Foxboro 6-instrument cabinet controls milk fore-warmer temperatures with Dynalog* Electronic Instruments. **2-, 4-, or 6-instrument cabinets** can be installed individually, or in combination — provide complete centralized control of any food process, large or small.



FOOD PACKER — CALIFORNIA Automatic control of process evaporator is easily handled from the Foxboro cabinet. Integrated control system, specifically designed for the process by Foxboro, assures perfect quality and flavor of concentrate. **Grouping of related controllers and indicators** results in easier operation, simpler maintenance.

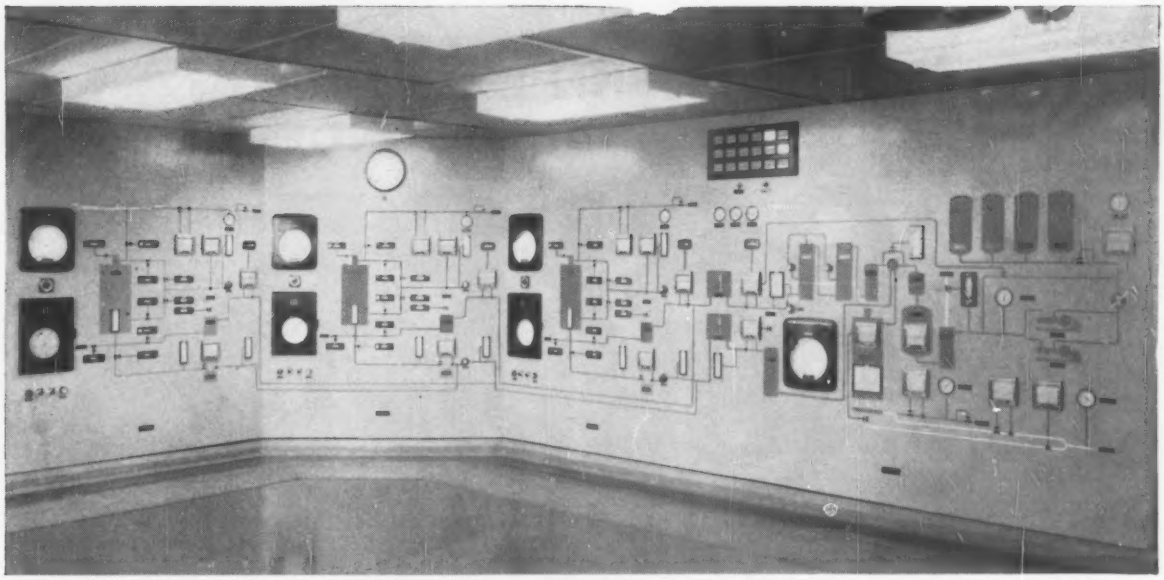
For any food plant –

an integrated Foxboro



COFFEE PROCESSOR — NEW YORK This centralized control panel has its graphic diagram painted on a formica plastic background, permitting easy modification of the diagram should process changes occur. **Painted formica panels** are only one of several types of graphic control panels available from Foxboro.

BREWERY IN MEXICO Complete Foxboro centralized control system simplifies operation of rice and mash cookers, hot and cold water tanks, lauter tubs, and brew kettles. Air tubing is neatly formed and fitted to permit easier servicing and maintenance. System was designed and assembled in Foxboro, Mass. — shipped in sections for installation in Mexico.



VEGETABLE OIL REFINERY — ILLINOIS Complete control of hydrogen generation units is accomplished from this graphic panel. Small-case Consotrol* Recording-Control Stations are installed right in the process diagram — linked to their appropriate measurement and control points by colored lines — resulting in easier operation and better process supervision. **All back-of-panel connections** are plainly marked for quick and easy identification.

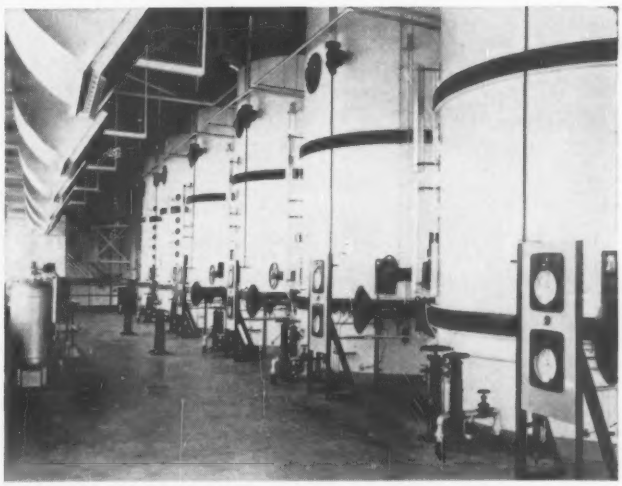
for every food process

Packaged Control System

Complete packaged control systems providing centralized operation from one convenient location! It's the trend that's streamlining the efficiency of many food plants today.

Foxboro custom-engineered packaged control systems make it easy. Years of application engineering experience insure that instruments are exactly suited to your process—shipped already mounted in cabinets or panels, completely piped and wired. Only power and process connections are needed to put them into operation. This simplified installation, plus the operating convenience and low maintenance of these custom-engineered control systems keep cost at a minimum.

Full details on Foxboro Packaged Control Systems are now available in a new series of specification sheets. They'll give you complete information on the design and construction of cabinet and panel units . . . as well as Foxboro's rigid requirements for high quality piping and wiring. Write for them today. **The Foxboro Company, 301 Neponset Avenue, Foxboro, Massachusetts, U.S.A.** *Reg. U.S. Pat. Off.



SUGAR PLANT — CALIFORNIA Local control for these vacuum pans is provided by individual panels for better operator supervision. Heavy gauge steel panels protect instruments and accessories from accidental damage.

FOXBORO
REG. U.S. PAT. OFF.

INSTRUMENTATION FOR THE FOOD INDUSTRIES

THE MODERN EXPANDED FOOD COLORING CONCEPT

COLOR NOURISH

WITH

VERSATILE

ROCHE *beta* CAROTENE

USE ONE PRODUCT TWO WAYS

COLOR

Give your oil-base and water-base foods color versatility and variety—from appealing pale yellow to hearty, appetizing orange—with Roche *Beta* CAROTENE.

NOURISH

Give your oil-base and water-base foods the nutritional-plus added by Vitamin A value in "the color that nourishes"—Roche *Beta* CAROTENE.

VERSATILE ROCHE *beta* CAROTENE

The Expanded **2-in-1** *Food Coloring Concept*

COLOR PLUS NUTRIENT

Safe as a Color, Safe as a Nutrient for Oil- and Water-Base Foods

Margarine . . . Shortening . . . Baked Goods . . . Salad Oils . . . Cooking Oils . . . Ice Cream Products . . . Mellorine . . . Frozen Foods . . . Fruit Drinks . . . Fruit Juices . . . Fruit Concentrates . . . Gelatine Desserts . . . Puddings . . . Egg Yolk Products . . . Candies . . . Dessert Toppings . . . Soups . . . Cheese . . . Popcorn . . . Creamed Foods . . . Pie Crust Mixes . . . Cake Mixes

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Vitamins Come *Right* from Roche

ROCHE ®

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DEVELOPMENTS TO WATCH

Continuous juice extractor squeezes grapes between belts made of perforated steel plates. At closest point, belts are 1/8 in. apart. Developed by University of California, extractor removes desirable flavors and aromas without causing excess oxidation.

Process for melting barley is shortened 1 or 2 days with gibberelic acid. Malt is little affected by treatment.

Frozen apple juice super-concentrate (6-1) developed by USDA scored favorably in market tests. It is produced in one-pass atmospheric evaporation and flavor-recovery process (FE, Jan. '59).

Instant sweetpotato flakes are produced by new USDA pilot plant in New Orleans lab. Process is like that for white potato flakes.

New techniques for protecting grain are suggested by Prof. L. E. Brownell, University of Michigan. It would be packaged in water- and insect-proof bags and treated with portable irradiator. Grain then could be stacked anywhere for storage.

Oranges or grapefruit can be shattered into thousands of juice cells after freezing in liquid nitrogen. Cells offer promise as new flavor for ice cream, beverages and candy.

Tenderizing meat with enzymes following freeze drying is under study in Scotland. Spongy texture of meat absorbs enzymes quickly.

Promising new meat preservation technique involves use of aureomycin hydrochloride to reduce gamma irradiation dosage.

In new approach to dental decay problems, U. S. researchers will feed bread containing added calcium phosphate to more than 600 school children for a 3-yr. period.

Research on body's use of edible fats has been advanced dramatically by new analytical methods for measuring either stored or newly formed fats inside the body, Nutrition Foundation reports.

See Who's Building What p. 17

Dessert toppings ran be heated and dispensed from single-service mylar-poly pouch introduced by Continental Can.

High-protein, 900-calorie, powdered concentrate is added to skim milk to produce new diet control item containing day's supply of vitamins and minerals. It is development of Plan Foods and Research.

Washington Report p. 25

Improvements in plants are reported by USDA: Cabbage with resistance to clubroot; red-stele-resistant strawberry; citrus rootstock resistant to burrowing nematodes.

A new bulletin gives information on MYVACET® Distilled Acetylated Monoglycerides, now approved for food use

Bulletin A-1 describes their advantages, includes a list of 69 pertinent scientific papers and patents, and a compilation of projected uses.

This information will be of interest to food processors in view of the recent official approval* of the use of these materials, up to 5% in finished foods, as a food coating agent, container component, equipment lubricant, or emulsifier.

*See Regulations of the Food & Drug Administration Sec. 121.1018

Other bulletins discuss specific applications of these interesting products

Foods in which the use of *MYVACET Distilled Acetylated Monoglycerides* would appear to be of greatest efficacy include poultry, frozen and processed meats, frozen fish, dried fruits, nuts and candies, and storage eggs.

Bulletins on each of these applications have been prepared to assist in new-product development programs. Poultry and meat uses may require further specific clearances from USDA; we shall be happy to assist our customers to get such approvals.

For copies of the bulletins, samples of different types of *MYVACET Distilled Acetylated Monoglycerides*, and quotations, write ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York and Chicago • W. M. Gillies, Inc., West Coast • Charles Albert Smith Limited, Montreal and Toronto.

distillers of monoglycerides made from natural fats and oils

DPi

Also . . . vitamin A in bulk for foods and pharmaceuticals

Distillation Products Industries *is a division of* **Eastman Kodak Company**

Who's Building What ...

Monthly Reports: These food firms will spend $3,186,630 for expansion.

Low Bids/Contracts

H. L. Hunt Products Co., Nacogdoches, Tex., chicken processing & canning plant, $288,500.

J. E. Morgan & Sons, Inc., Dallas, Tex., meat packing plant, $1,000,000.

Metzger Dairy, San Antonio, Tex., warehouse, $113,130.

Norwell-Wetterau Grocery Co., Mexico, Mo., warehouse addn., $130,000.

Pepsi-Cola Bottling Co., Washington, D. C., bottling plant, $1,000,000.

Potts Ice Cream Co., Philadelphia, plant addn., $110,000.

Prince Macaroni Mfg. Co., Lowell, Mass., warehouse, $435,000.

Ward Baking Co., West Hartford, Conn., bakery addn., $110,000.

Proposed Projects

Breuninger Dairy Co., Southampton, Pa., cold storage plant, $110,000.

Campbell Soup Co., Fayetteville, Ark., hatchery, $150,000.

Buckeye Brewing Co., Toledo, O., warehouse & bottling plant, $125,000.

Cornlans Dressed Beef Co., Lexington, Neb., plant, $350,000.

Dillon Food Stores, Lawrence, Kan., baking plant, $250,000.

Foremost Dairy Co., Tacoma, Wash., dairy addn., $110,000.

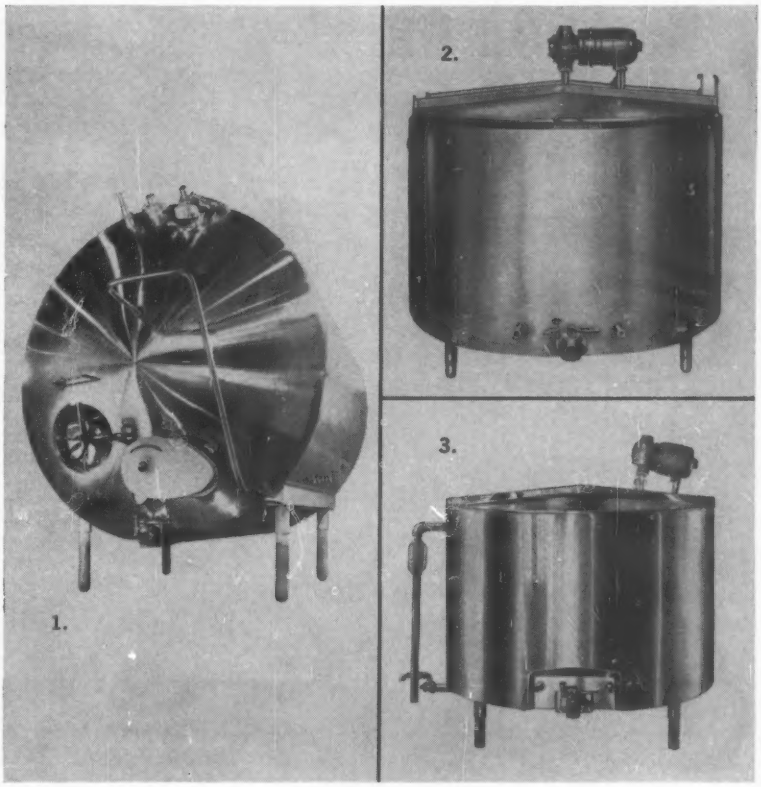
Gebhardt Chili Powder Co., San Antonio, Tex., plant, $200,000.

Johnson County Frozen Foods, Inc., Lamar, Ark., frozen food plant, $300,000.

McRae Coca-Cola Bottling Co., McRae, Ga., bottling plant, $130,000.

Rose Packing Co., Forest View, Ill., meat packing plant, $113,890.

FLUIDICS* AT WORK



Three ways to increase efficiency in dairy and food processing

For storage, processing, or pasteurizing you'll find a line of Pfaudler® equipment to help you do the job efficiently.

1. Storage. More milk is stored in Pfaudler-built tanks than in any other make—with good reason. Every tank is made to 3-A sanitation standards. Construction of wall cooler sections for ammonia, freon or chilled water is ASME approved. Choose from cylindricals or rectangulars in 600 to 8000 gallon capacities — if you need more capacity, we can provide it in the 10- to 20,000 gallon range. Often you can "stretch" cramped floor space with our rectangular tank design.

2. Pressure Process Vats. In any size, from 100 to 1000 gallons, you get effective heating or cooling of any fluid product, plus mixing, blending, and holding. Run full or partial batches. Pressurizing jacket, where appropriate, cuts process time. You can also specify *vacuum-pressure* vats for removing unwanted tastes and odors during processing.

3. Mixer-Pasteurizer. Here's the way to thorough blending of additives including powders, frozen cream and butter. Proper agitation assures you of no "lumping." Heat-up is fast. Select capacities from 150 to 1000 gallons, in stainless steel.

For complete information on any of these products, write to our Pfaudler Div., Dept. FE-11, Rochester 3, N.Y.

*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

PFAUDLER PERMUTIT INC.
Specialists in FLUIDICS...the science of fluid processes

Which of these features do you look for in a FOOD OR BEVERAGE HOSE?

Freedom from Odors and Taste?
Ease of Cleaning and Sterilizing?
Transparency?
Flexibility?
Long Service Life?
Wide Range of Standard Sizes?

TYGON® plastic TUBING B44-3 *combines them all!*

Remaining flexible throughout the full range of normal operating temperatures, Tygon plastic Tubing, Formulation B44-3, is also as clear as glass, permitting visual inspection and control of flow.

Non-contaminating and non-toxic, Tygon Tubing B44-3 neither imparts nor absorbs taste or odors, is safe with even the most flavor-sensitive products.* Because of its smooth, hard bore, Tygon Tubing is easily cleaned, can be sterilized with steam (open end method) or bactericides.

Tygon Tubing is non-aging, highly resistant to abrasion, and has a flex life 10 to 12 times greater than rubber. More than 65 standard sizes, up to 4″ I.D., are available in continuous lengths.

*For processed milk and milk products, use Formulation B44-4X.

See why Tygon Tubing, Formulation B44-3, is almost universally the preferred plastic for handling foods and beverages. Get complete information — write today for your free copy of Bulletin T-100.

443-F-3

PLASTICS & SYNTHETICS DIVISION

U. S. STONEWARE
AKRON 9, OHIO

TYGON is a registered Trade Mark of The U. S. Stoneware Co.

CIRCLE 18 ON READER SERVICE CARD

Another Finnell First!

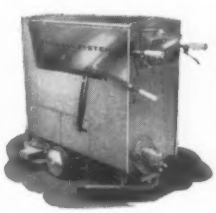
CUSTOMER / DESIGNED

BATTERY-POWERED SCRUBBER-VAC

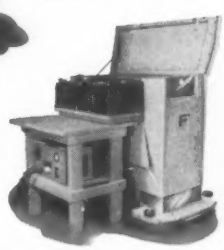
in two sizes MARK 20 MARK 26

for quiet, efficient, continuous scrubbing

Five years of research, engineering, and on-the-job testing of various pilot models have enabled *Finnell* to offer a *battery-powered combination machine* that is truly *customer/designed!* Incorporating the features *most wanted* by a cross section of business and industry, the unit *performs quietly* . . . has *compensated motor* . . . *specially designed battery rack* to eliminate lifting out batteries . . . *simplified controls* to assure greater ease of operation . . . *accessibility of all parts* to permit safe, easy inspection and maintenance . . . *sturdy gear system* to reduce maintenance costs. And like all *Finnell Combination Machines,* the unit applies cleanser, scrubs, and picks up — *in one operation.* Independence from power lines enables the machine to go wherever the operator guides it . . . *scrubbing continuously.* The *Mark 20* cleans up to 15,000 sq. ft. per hour; the *Mark 26,* up to 21,600 sq. ft. per hour. Brushes are counterrotating to eliminate torque. Each unit is powered by four standard 6-volt, 25-plate, 210-ampere batteries which permit up to eight hours of operation without recharging. *Finnell* also makes *battery-powered combination machines* in larger sizes.



No switches to set for fast or slow — pressure of hand on clutch lever adjusts speed (up to 180 lineal fpm). Variable brush pressure to meet specific needs.



A compact battery charger is included with each unit as standard equipment. Batteries can be charged on the machine or rolled out on a charger bench.

For consultation or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 5701 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

FINNELL SYSTEM, INC.

Originators of Power Scrubbing and Polishing Machines

Everything FINNELL for Floor Care

BRANCHES IN ALL PRINCIPAL CITIES

The Perfect Container doesn't Just Happen!

THIS hard-shelled fellow has a right to be happy as you-know-what. For Mr. Clam's shell is an open-and-shut case of a container that does what it is supposed to do . . . best!

The Canco team . . . thoughts for food!

In the food field, Canco containers do what they are supposed to do . . . best! Behind every Canco success story are the experts who made it possible—Canco's aggressive team of research, manufacturing and marketing experts . . . the most experienced group in the container industry. Their knowledge of food processing and consumer needs has resulted in the leading packages of today and assures you that the great containers to come will come from Canco.

To help boost your profits, put the Canco team to work on your packaging problems.

GREAT CONTAINER IDEAS COME FROM CANCO

CANCO DIVISION
AMERICAN CAN COMPANY

When you use our products in your products, quality joins quality

The fine foods you process gain a new measure of sales appeal and consumer satisfaction when you use CLINTON products from corn. Over 50 years of corn processing experience assures the quality of CLINTON CORN SYRUP, CORN STARCH, REFINED CORN OIL, LACTIC ACID and CLINTOSE BRAND DEXTROSE.

Watch Clinton for new product developments

CLINTON CORN PROCESSING COMPANY

CLINTON, IOWA

← CIRCLE 21 ON READER SERVICE CARD

CIRCLE 22 ON READER SERVICE CARD

If color is your problem...

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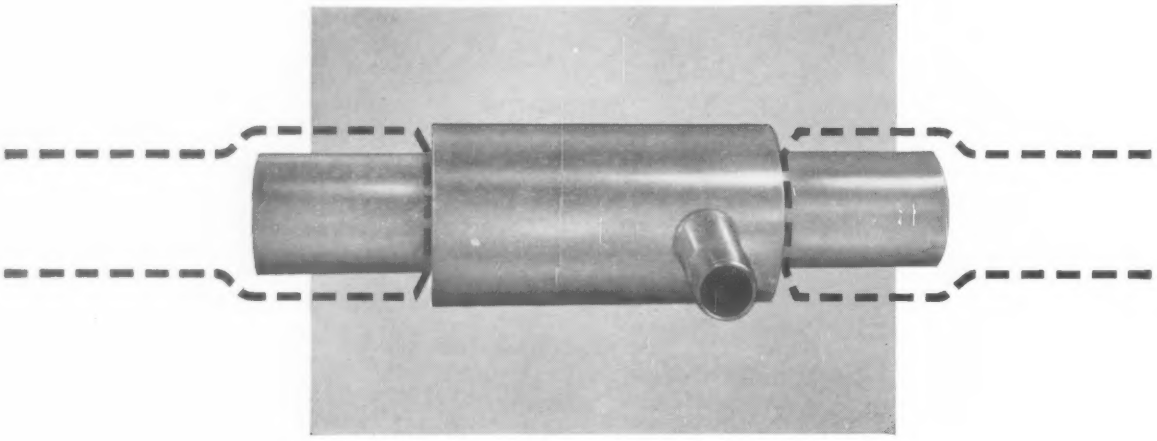
First producers of certified colors. 161 Ave. of the Americas, New York 13; 11-13 E. Illinois St., Chicago 11; 2632 E. 54 St., Huntington Park, Calif. In Canada: Stuart Bros. Ltd., Montreal, Toronto, Winnipeg & Vancouver.

NEW

THERMOS-COUPLE*



A temperature sensing element that's truly sanitary!

Engineered specifically for the food industry, the new Honeywell *Thermos-Couple* is the *only truly sanitary temperature sensing element* on the market today. Reason: there's absolutely nothing protruding into the line. No crevices or welds in contact with the product, either. And no matter how viscous your product is, the *Thermos-Couple* will accurately sense temperature.

To install the *Thermos-Couple* you need neither new tools nor special parts. You can use your standard sanitary fittings . . . or weld the unit in place. Since it contains no moving parts, the *Thermos-Couple* is practically service-free.

This new unit can be used wherever you want to measure a line temperature. A quick-connect plug or plug jack on the thermocouple wire lets you use up to 24 units for measuring as many points with one *ElectroniK* multi-point recorder. It's ideally suited for clean-in-place methods.

Get all the facts on the new Honeywell *Thermos-Couple*. See your nearby Honeywell field engineer. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.—In Canada, Honeywell Controls, Ltd., Toronto 17, Ontario.

*Trademark, Minneapolis-Honeywell Regulator Co.

Honeywell

First in Control

SINCE 1885

← CIRCLE 23 ON READER SERVICE CARD

CIRCLE 24 ON READER SERVICE CARD

Washington Report

Food-fats issue heats up . . .

FTC jolts Foremost, Pillsbury . . .

Chain manufacturing hit

Fat's In The Fire

Hottest subject in and out of government offices these days is the amount of fat in foods. With consumer groups all stirred up on subject, policymakers are working the mimeograph machines overtime.

Food & Nutrition Board, at the National Academy of Sciences, will conduct a new investigation of fats in foods this Spring—to update its '58 study. "We can't afford to ignore the subject," a spokesman says.

At USDA, citizens advisory committee urges a new probe. The group (part of Home Economics Research Advisory Committee) says, "It is important to determine how the metabolic response to different kinds and amounts of fats is affected by other dietary components and by a person's age."

More Power for Plant Inspectors

FDA will fight hard for tougher factory inspection law. Agency feels its current high standing with the public makes this a good time to press for more power.

Inspectors complain that present law isn't clear as to what they can and cannot look at. **They want a law to give them undisputed right to go where they want, take pictures of anything they please, and examine any and all files.**

Signs point to a battle over this point in Congress. FDA may have to settle for less than it wants.

Stronger Legal Curbs Sought

There's nothing wrong with the food industry that tougher laws and more vigorous-minded enforcement officers can't cure. So suggested House Small Business Subcommittee in a report of its sweeping investigation of economic concentration in the food industry.

Group's majority report hit hard at chain mergers, vertical integration by retailers, rise of private labels, preferential treatment for bigger distributors, and discriminatory buying polices. Recommended were: Changes in the Packers & Stockyards Act and Federal Trade Commission Act to bar retailers from going into manufacturing, Clayton Act amendments to tighten anti-merger curbs, and a strengthened R-P Act to prohibit price discriminations.

Critical minority dissent argues that report ignores rising influence of the "new type" of independent store, and that chains are blamed unduly for industry's ills.

Study Radiation Level in Diets

Consumers Union, which began keeping tabs on radioactivity in selected foods in '59, got a $20,000 grant from the Government to pursue the studies on a wider scale. Atomic Energy Commission awarded the contract to CU for a cooperative project that will cover sample diets in 25 cities in 22 states.

False Labeling Campaign Stepped Up

Name-conscious FDA tackled two of the biggest margarine makers as part of its intensified campaign against what it considers misleading labeling. This time, Kraft (Parkay brand) and Lever Bros. (Summer County) were the targets.

FDA ire at Parkay was aimed against the phrases "extra nourishing" and "extra nourishment." In reply, Kraft said it had doubled the amount of Vitamins A and D in the product.

Busy FTC Moves Against Foremost . . .

In a case watched closely by the dairy field, an FTC examiner provisionally ordered Foremost Dairies to get rid of 9 competitors it acquired in '52 and '53. Similar cases are pending against National Dairy, Borden, and Beatrice Foods.

Even more significantly, however, was the examiner's finding that Foremost need not divest itself of 40 other acquisitions as originally contended by the FTC trial attorney. **In what could be a far-reaching principle, the examiner ruled that the FTC could not assume that because one of a series of mergers was unlawful it made all other acquisitions illegal.** This argument could affect the outcome of cases pending against Kroger and National Tea.

Doctrine of "cumulative illegality" would put business in a straight-jacket, the examiner said.

Pointedly, examiner ruled mergers are not unlawful if: (1) acquired firm is not engaged in interstate commerce, (2) there is no evidence of adverse effect on competition, (3) the acquired firm was not a dominant force in the local market, and (4) if the merger took place in a market where the acquirer was not previously engaged in.

. . . And Pillsbury

Two days before Christmas FTC ordered Pillsbury to sell two companies—Ballard & Ballard (acquired in '51) and Duff's Baking Mix (bought in '52). Commission ruled that B&B acquisition lessened competition in family flour, home mix, and wheat milling fields, and Duff move did the same in the home mix market.

In a strong protest, Pillsbury said it would appeal. Pres. Gerot said FTC ignored data on market changes that have taken place since '51, and that competition has increased because of the flow of new products and Pillsbury's expansion to markets "it had been uneconomic" to reach prior to the acquisitions.

NEW MIXER

Get set to topple some traditions in fluid-mixing ease and economy

You won't have to lubricate it for five years.

You can't overload the gear drive.

It comes with a chemical plant motor as *standard*, at no extra cost.

You don't need three hands to remove the shaft.

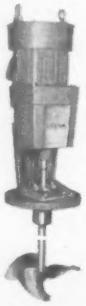
And it mixes fluids like no portable mixer you've ever seen. Delivers up to 45% more fluid flow in gear-drive models. Higher impeller head in direct-drive models. Actually lets you handle many mixing jobs with a *smaller* mixer drawing *less power*.

That's just a sampling of the new LIGHTNIN Portable Mixer. It's ready—in sizes from ⅛ to 3 hp. And the price is right.

Your LIGHTNIN Mixer representative will be glad to show you why you can use it to mix fluids better—and at lower cost—than ever before. You'll find him listed in Thomas' Register of American Manufacturers and in the yellow pages of your telephone directory. Call him today. Or write us for descriptive Bulletin B-520.

SHOCK OVERLOADS can't damage the mixer drive. In gear-drive models, GripSpring assembly between gear and drive shaft lets gear slip if overloaded more than 50%. It's a safety feature you never could get before in a portable mixer.

IN FIXED MOUNTINGS, TOO. Get the same all-new advantages in permanent-mounting LIGHTNIN Mixers for open and closed tanks. A complete line, sized from ¼ to 3 hp. For details on these, send for Bulletin B-521.



Lightnin® Mixers

MIXCO fluid mixing specialists

MIXING EQUIPMENT Co., Inc., 143-a Mt. Read Blvd., Rochester 3, N.Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 19, Ont.

Washington Briefs

Use of preservatives and mold inhibitors on butter wrappers could result in violation of the product's standards, FDA says. Basis for warning is assumption that some preservatives used may migrate to the butter. Label declarations would not make situation legal since butter standard does not recognize preservatives.

Tax laws covering overseas subsidiaries of American companies are being scrutinized by Treasury Dept. Congress, which asked for the survey, last year eased tax laws on foreign-based profits.

Two weight-reducing food supplements drew FDA fire on the grounds ingredients did not match up with the contents as stated on the label. Also, that they're not actually a "food concentrate." Defendants (Peoples Drug Stores and Wey-Rite Potomac Sales) said they plan to re-label to meet all FDA objections.

As part of its "get-tough" attitude toward deductions for "unusual" business expenses, Internal Revenue Service will look at company entertainment deductions of the past few years.

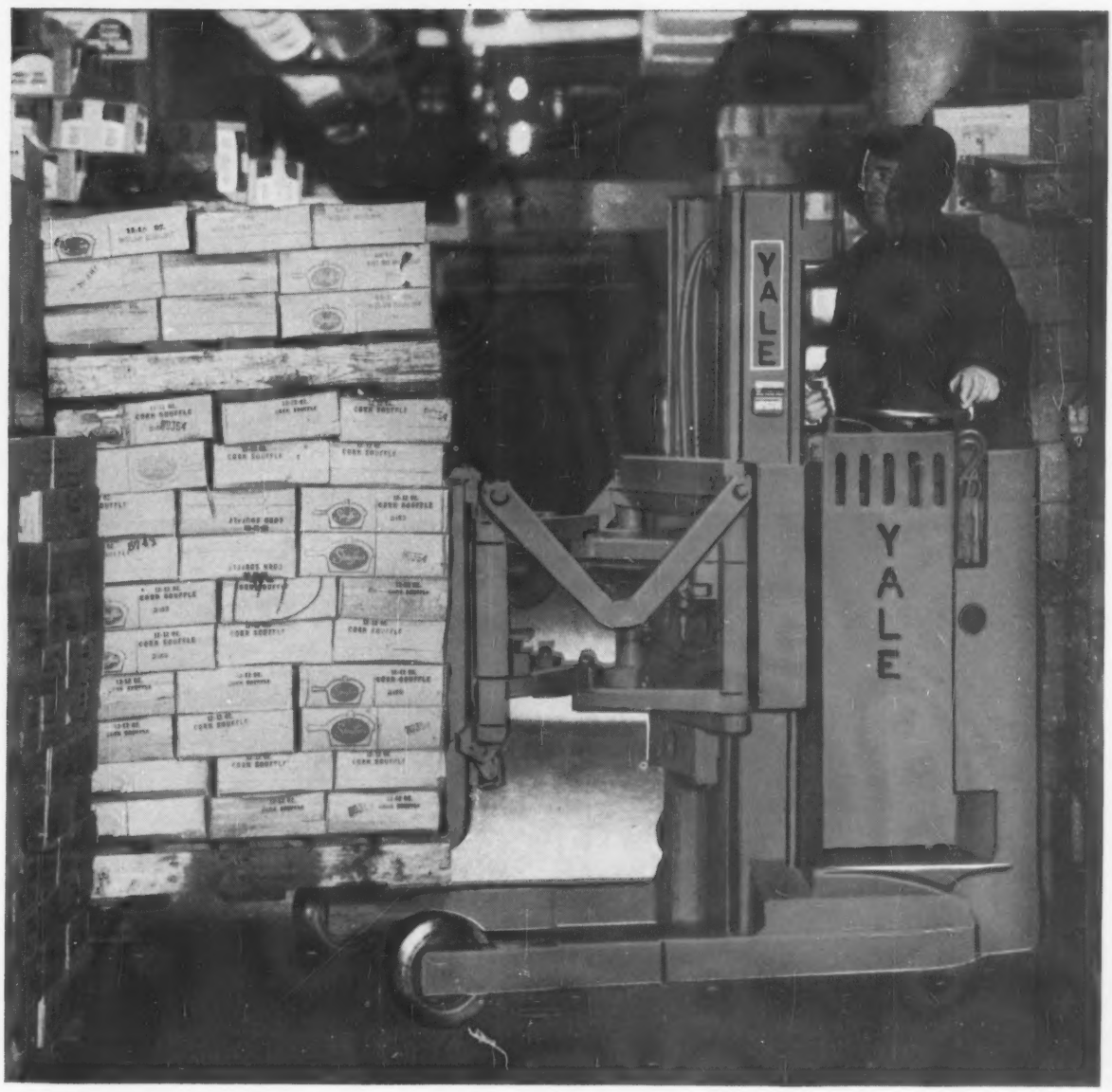
Revision of regulations governing grading and inspection of domestic rabbits and related edible products was ruled impractical and unnecessary by USDA.

Safrole and oil of sassafras are banned as flavoring agents in food and beverages. Substances have been shown to cause cancer in animals. However, FDA acknowledged principal use in root beer, sarsaparilla and similar beverages had already been discontinued voluntarily.

Hearings on new standards for orange juice products start Jan. 30. Standards were issued last March but objections forced hearing.

Status of FD&C Red Colors Nos. 2, 3, and 4 remains unchanged. They are certified for 2½ year provisional list established as result of new Color Additive Amendment.

save space you can't afford to waste



YALE WAREHOUSERS

GET MORE PALLET ROWS IN THE SAME SPACE • WAREHOUSER CAN WORK IN A 6 FT. AISLE • STACK TO 20 FEET AND MORE • SAVE ON LOW MAINTENANCE • 24 VOLT SYSTEMS GIVES FAST LIFT AND SUSTAINED HIGH SPEED POWER • REDUCE POWER COSTS • 2000, 3000, 4000 LB. CAPACITY.

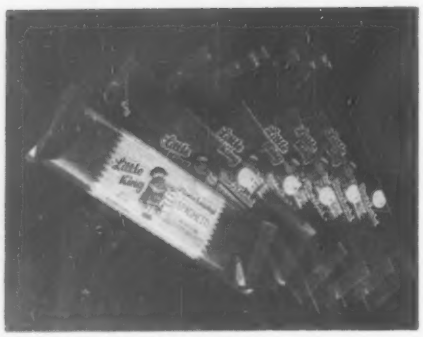
Yale Extend-A-Load model handles various widths of loads because different size pallets and skid bins can be handled without nesting between outriggers. Yale's exclusive separate power unit for fork extension conserves power. Extend-retract device designed for low overall height saves space in high stacking. Forks tilt back to 6 degrees to protect load and speed operations. Can be extended, retracted or tilted at any height of lift. Twin tilt cylinders eliminate sway of forks— provide load stability.

One of Yale's flexible finance plans can put this truck to work for you immediately. For more information, contact your Yale Representative, or write to: Yale Materials Handling Division, Philadelphia 15, Pa., Dept. R-101, a Division of The Yale & Towne Manufacturing Company.

YALE®
INDUSTRIAL LIFT TRUCKS
TRACTOR SHOVELS · HOISTS
YALE & TOWNE

Only one company can recommend the right truck for the application—the company that makes them all—Yale

new packages & products



FILM BAG FOR SPAGHETTI

FILM OR GLASS FOR POPCORN

MARKET SPAGHETTI IN NEW FILM PACKAGE

Display and convenience are the two top sales ingredients of a new spaghetti package being introduced by Thormina Bros., New Orleans.

Fabricated of clear Tenite polyethylene from Eastman Chemical Co., the attractive heat-sealed bag serves as an excellent moisture and dust barrier. Film's flexibility permits the housewife to break product while still in the package and pour directly from bag into water. Printability further enhances package's appearance. (401)

POPCORN POPS UP IN GLASS & FILM

Two distinct and novel methods of packaging popcorn have been introduced—one in glass, the other in film.

Instant Popcorn from Blevins Popcorn Co., packaged in oil, comes in a glass container designed with horizontal blown decorations to closely resemble an ear of corn. Owens-Illinois supplies the package, screw-top closure, and inner seal. (402)

From TV Time Foods comes a film package that separates hullless corn and nut oils into two sections. Durafilm, a combination of saran coated cellophane coated with polyethylene, is supplied by The Dobeckmun Co. Div. of The Dow Chemical Co. (403)

PICTORIAL STOCK DESIGNS SPARK ICE CREAM CARTONS

High-styled ice cream cartons feature colorful wrap-around pictorials of attractive table settings to create a feeling of graciousness and quality.

Available from Riegel Paper Co. in pints as well as half-gallons are 10 different designs, each of which pictures a popular flavor or combination in full color. Riegel's "Silver Series" is printed by litho on solid board. (404)

JELL-O HAS NEW DESIGN AND LARGER SIZES

New designs and family sizes are the latest packaging changes in General Foods' line of Jell-O Puddings and Pie Fillings.

Design's double face and use of Jell-O name and flavor on every panel provides easier shelf stocking plus better identity and display.

Since one-fourth of all U. S. families number five or more persons, larger size is claimed to offer more convenience with increase of four to six servings—and more economy, too.

For more information, circle key numbers on Reader Service Card, back of book

PICTORIALS FOR ICE CREAM

RE-DESIGNED JELL-O PACKS

NEW STARLAC CANISTER

NEW YUBAN DESIGN

FOIL CANDY BAG

FAMILY-SIZE STARLAC DEBUTS IN A CAN

A re-usable copper and white enamel canister is being used to introduce Borden Foods Co.'s new 20-qt. package of Starlac nonfat dry milk.

New size has a shelf price competitive with other 20-qt. nonfat dry milk products, which makes the canister a free premium that is attractive to consumers. Produced for Borden by Decoware Div. of Continental Can Co., package also features a re-designed Starlac label. (405)

RE-DESIGN YUBAN FOR ADDED APPEAL

Rich brown background and yellow oval were kept in the re-design of General Foods' Yuban vacuum packed coffee undertaken as part of their new promotion program.

Previously, percolator in a red triangular shape was thought to create a "confusion of image." Percolator is now emphasized as an unmistakable quality mark. Also, embellishment above and below product name is eliminated and contemporary styles of lettering are used. Robert G. Neubauer, Inc., created the new image. (406)

FOIL BAG BOOSTS SALES FOR DIETARY CHOCOLATE

Switch from a printed carton to a golden foil bag is reported to have lifted sales 50% for an artificially sweetened chocolate bar manufactured by Chicago Dietetic Supply House, Inc.

Milprint, Inc., flexographically prints the bag in four colors, including a rich gold background that dominates shelf appearance. An in-

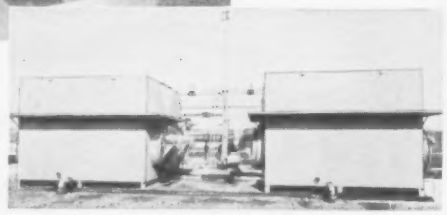
Borden's New "Dairyland Showcase" plant relies on an all-Vilter Refrigeration System

With 110,000 square feet of floor space, Borden's new $3,000,000 Milwaukee milk and ice cream plant is one of the most up-to-date and modern dairies ever built.

Borden's

Overall view of compressor room showing the six Vilter ammonia high-stage VMC compressors, Vilter brine cooler and liquid receiver. Five rotary booster compressors are installed in a line behind the intercooler.

View of the two Vilter VP350 evaporative condensers which handle the discharge from the compressors. A center partition in each unit provides an efficient means of reducing capacity and maintaining desired head pressure during cold weather.



500,000 quarts of milk a day! 5,000,000 gallons of ice cream a year!

These are the very imposing capacities of Borden's new Milwaukee milk and ice cream plant—the largest in Wisconsin.

An extensive all-Vilter system provides the refrigeration for the varied requirements of this plant. *Four* separate methods of refrigeration are employed—direct expansion, liquid recirculation, flooded and brine.

Borden's compressor room contains six Vilter ammonia VMC compressors and five boosters. A 42" x 10' Vilter intercooler is installed between the two stages. Handling the discharge are two Vilter VP350 evaporative condensers.

Each day the largest sweetwater tank installed in the state of Wisconsin chills 670,000 gallons of water to 33° which, in turn, holds the pasteurized milk storage tanks at 38°. Fifteen air units provide the refrigeration for the milk cooler, and forty-four truck charging positions accommodate the milk delivery fleet.

Other major Vilter equipment includes a hot gas defrost blast freezer for Borden's mammoth ice cream hardening room and a brine cooler for ice cream bar freezing.

All equipment selected by Borden was chosen to perform its job efficiently, quickly and insure the most sanitary, pure and wholesome products. Vilter is proud to play a part in this, Borden's "Dairyland Showcase."

Why not check with Vilter on your refrigeration problems?

Vilter® refrigeration air conditioning

The Vilter Manufacturing Company
Milwaukee 7, Wisconsin

Air Units • Ammonia and Freon Compressors • Booster Compressors Baudelot Coolers • Water and Brine Coolers • Blast Freezers Evaporative and Shell and Tube Condensers • Pipe Coils Valves and Fittings • Pakice and Polarflake Ice machines.

Write for your copy of bulletins covering above equipment to The Vilter Manufacturing Company, Dept. E-603 2217 South First Street Milwaukee 7, Wisconsin.

ner glassine face furnishes a grease resistant barrier for the product, which is also benefiting from a general increase in consumption of dietary foods. (407)

'CONVERSATION PIECE' container for Barton Salt Co. is designed as a replica of the traditional "salt box" type of home architecture. Arkell and Smiths is bag manufacturer. (408)

New Product Shorts

Frozen salad dressing a combination of safflower oil, waxy-rice flour, and fresh egg yolks, has been developed by USDA's Western Utilization Research Lab, Albany, Calif.

Pre-Sliced Frying Potatoes is the third convenience potato product from R. T. French Co.

Pecan Butter, developed by USDA's Georgia Experiment Station, is expected to become a commercially valuable end product for nation's pecan crop.

New Era Potato Flakes, scientifically produced via a "flavor-lock" process, is new instant mashed potato item from The Frito Co.

Packaging Briefs

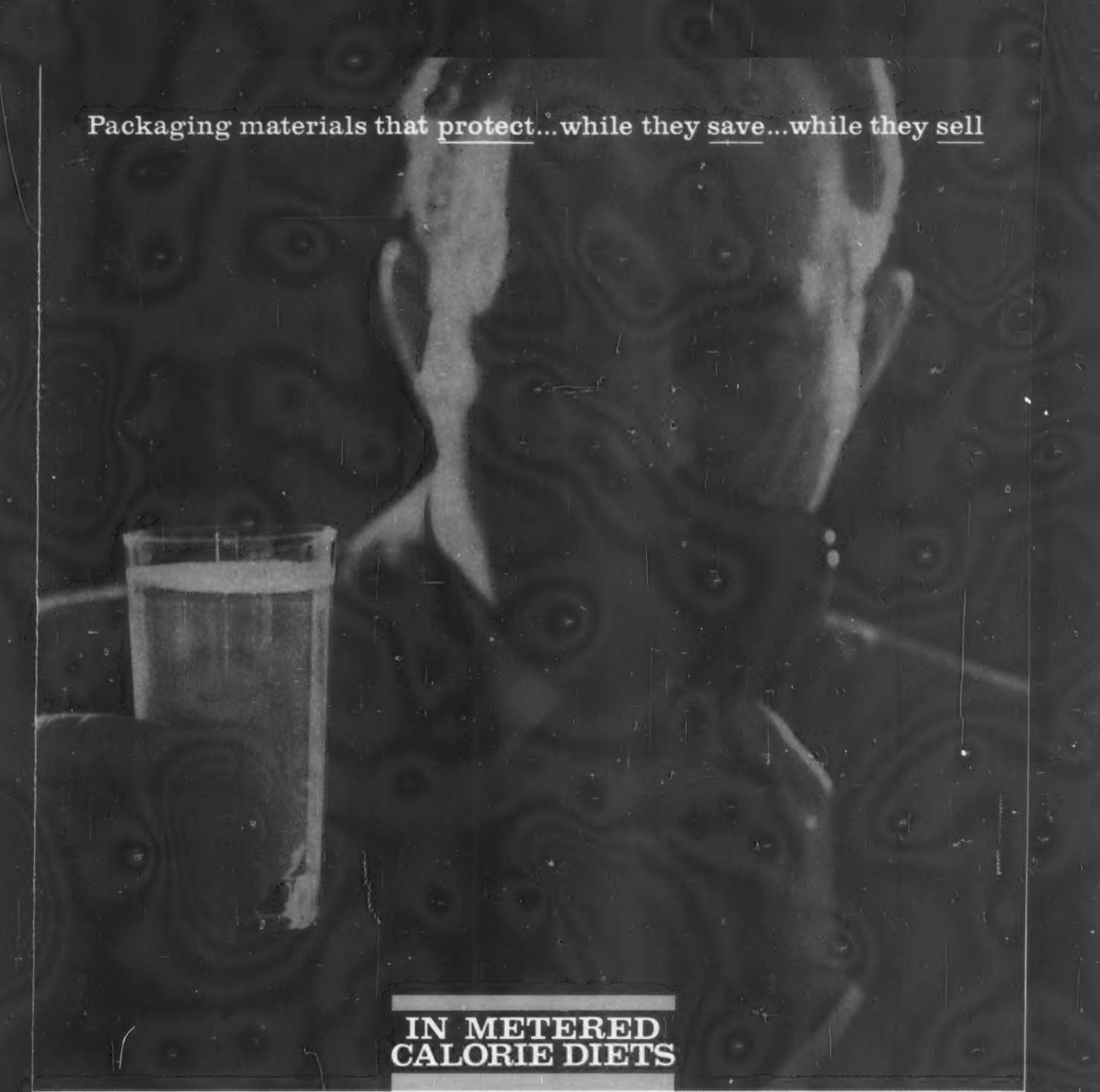
Blis-Stix, a self-adhering blister packaging adhesive from Adhesive Products Corp., is claimed to allow elimination of costly equipment. (409)

Wetpack produce bag, specifically designed as a bulk shipping and storage container for jumbo carrots, is constructed of open-mesh Saxolin fabric laminated to an inner sheet of perforated poly. Chase Bag Co. is supplier. (410)

Paterson Parchment Paper Co. has introduced an identifying keymark for products that have been approved as a food packaging material by FDA. Mark shows an armored knight holding a lance and shield, and below this the encircled "R" registry symbol. (411)

CIRCLE 30 ON READER SERVICE CARD

CIRCLE 31 ON READER SERVICE CARD →



Ten leading manufacturers of metered-calorie food concentrates for weight control use Riegel materials in convenient pre-measured pouch packages. They buy Riegel because their personal experience has given them faith in Riegel's technical leadership and Riegel's ability to *tailor-make* the right material for the product. This confidence, demonstrated by sales leaders in many fields, is an important reason why you too should talk to Riegel.

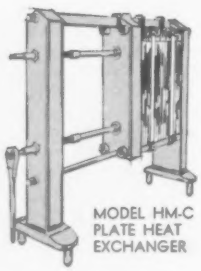
10

MAKERS BUY Riegel

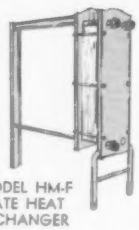
Riegel offers you more than 600 different packaging materials . . . standard or tailor-made . . . to assure just the right combination of product protection, machine efficiency and low cost. Pouch papers, paperboards, glassines, foils, films, laminated in various combinations . . . plastic-coated or waxed . . . printed or plain.

Write to
Riegel Paper Corporation,
260 Madison Ave.,
New York 16, New York.

First Name In Heat Exchangers



MODEL HM-C PLATE HEAT EXCHANGER



MODEL HM-F PLATE HEAT EXCHANGER

Chester-Jensen builds heat exchangers in types designed to meet *all* the specific problems of modern dairy and food products plants:

Plate Heat Exchangers for all run-of-mill heating and cooling services, as well as for those permitting the economy of high efficiency regeneration; and for HTST pasteurization.

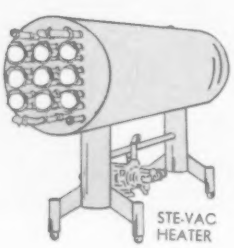
The Ste-Vac Heater for precision heating to high temperatures without burn-on or damage to product.

The Fan Cooler for economical cooling of viscous products to low temperatures and any service in which it is desirable to permit escape of gases from the product.

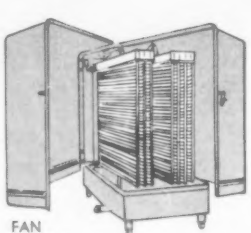
Vats of pressure-wall or full-flooded type, featuring rapid heating and cooling for processing or mixing under atmospheric or vacuum conditions. Circulation cleaning optional.

With these four general types of heat exchange units to offer, each available in several specific models and all required sizes, your Chester-Jensen sales engineer or distributor can be depended upon to recommend equipment which will meet *your* particular needs most efficiently and economically . . . always with due regard to product quality.

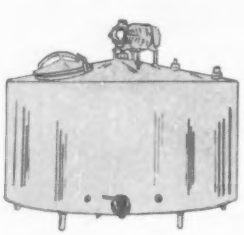
Literature on the above or other Chester-Jensen equipment will be mailed on request.



STE-VAC HEATER



FAN COOLER



"CLOSED TOP" ATMOSPHERIC PASTEURIZER

CHESTER-JENSEN COMPANY, Inc. • Chester, Pa.

Main Office and Factory: 5th and Tilghman Sts. *Branch Factory:* PURITY DIVISION, Cattaraugus, N. Y.

Specialists in Stainless Steel Heating and Cooling Equipment and Tanks

AHA Tosses Animal Fats Into Public Fire

Suppose you scream "FIRE!" Then in a voice unheard in the excitement you caution: "That is, there may be a fire. But don't flee the building until you consult a fireman."

That is virtually what American Heart Association did on December 10 when it issued this statement to the press:

"Reduced fat consumption—combined with reasonable substitution of vegetable oils and other unsaturated fats for animal fats in the diet—was recommended today as a means of preventing atherosclerosis and lessening the risk of heart attacks and strokes."

Makes scare statement to press

A very specific and fearful statement! Then came these qualifications:

1. "Medical guidance should be sought before individuals make specific changes in the diet."

In that case, why not leave it to the doctors in the first place?

2. "Fat reduction is possibly of greatest potential benefit to three groups: the overweight; persons who already have had a heart attack or stroke; and men whose personal family histories suggest they may be particularly susceptible to atherosclerosis."

Note the hedge words, *possibly* and *potential!* Anyway, the three physical situations are cases for the MD.

And the pay-off:

"The committee emphasized that there is no final proof yet that dietary changes can prevent heart attacks or strokes."

Since when do responsible scientific bodies make recommendations without knowing what they are talking about?

It might interest AHA to know this: Nutritionists have final proof that it is dangerous to monkey with the diet in ignorance of all the facts.

Top authority, Nutrition Foundation, puts AHA's recommendations in this light:

"If people are misled by confusing statements into changing their diet before the scientific facts are known, imbalances can result that endanger public health."

The behind the scenes truth is that the AHA statement is not really official. It was issued by a small *ad hoc* committee under pressure to take such action. The regular committee could not agree on a statement.

But what's done is done: The facts never catch up with the lie.

Prepare for course set by research

Now we shall see whether the public heeds AHA advice in a major way, or ignores it like anti-smoking news.

If damage has been done to dairy products and hydrogenated fats, then their manufacturers will be well-advised to alter products accordingly.

As a matter of fact, smart food technologists will tentatively prepare their employers to take the poly-unsaturated fat trail—AHA or not. Then if the intensive research on fats should give *final proof* that this course is wise, no time will be lost in taking it.

Meanwhile, don't deal health from the bottom of the deck.

NO "NEW IMAGE" FOR US, THANKS

Seems nowadays practically everyone talks about "changing the image," "creating a new corporate image" or "giving the product a more dynamic image."

There's no such talk around Jenkins Bros.

When it comes to valves, we're as modern as tomorrow! But when it comes to a new corporate image, no thanks. Not for us. Our corporate image is nearly 100 years old, and it still suits us just fine. Here's why:

We'll Keep our Old, 1869-Model "Image" – Our Business Friends Seem to Like It

"A Fair Offer" was first published in 1869. Simple and forthright, it said that Jenkins Bros. wanted Jenkins Valves to be judged on performance. But — and this made the difference — not on performance in the average application, but rather in the very toughest one. Note that phrase, "the worst place you can find."

To us, it just naturally figures that the product which asks for the hardest job, will also be better, longer lasting and more trouble-free in regular, run-of-the-mill applications. Makes sense, doesn't it?

At intervals we republish "A Fair Offer" just because it does make sense to so many of our customers and friends. It's a useful reminder that products may change but *higl standards* never go out of style.

JENKINS®

Jenkins Bros., 100 Park Avenue, New York 17

Jenkins Bros

A FAIR OFFER

If you will put a Jenkins Valve, recommended for your particular service, on the worst place you can find . . . where you cannot keep other valves tight — and if it is not perfectly tight or it does not hold steam, oil, acids, water or other fluids longer than any other valve, you may return it and your money will be refunded.

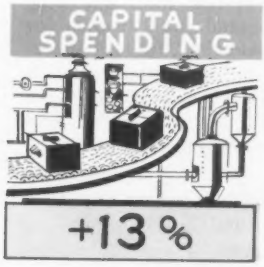
Jenkins Bros

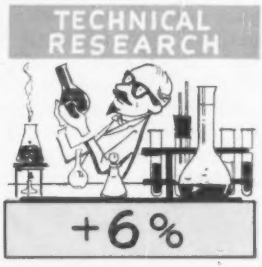
This early Jenkins Catalog carried the famous A FAIR OFFER which has appeared in every catalog since 1869.

Company Presidents Predict:

Sales, Profits Up 5% in '61

FE's 4th annual forecast shows strong capital spending to offset cost-price squeeze, keep new products flowing. Bigger ad budgets to fight private labels





RISING PROFITS and sales will keynote '61 for the food-beverage industry. That's the prediction of company presidents polled last month in FOOD Engineering's 4th Annual Forecast report.

Briefly, here's how the top executives' plans for the new year shape up (data weighted by company size):

- **Sales—Up 5.3%.**
- **Profits—5.0% fatter.**
- **Capital Spending—13.2% upsurge.**
- **Advertising—9.4% bigger budgets.**
- **Technical Research—6.7% hike.**
- **Market Research—4.4% rise.**
- **New Products—78% of respondents plan to unveil new items or improved versions of existing ones.**

What Does It Mean To You?

Now, here's the importance of these findings for your own forward planning for the new year.

Significantly, despite the somber hues of the general economy, sales improvement is looked for by a broad cross-section of outfits.

Among companies with annual volume of $10-mill. or less, 77% of the top execs see rising sales, 19% expect no change, and 4% admit they'll end up below last year's levels. Average expected sales increase: 7%.

In the medium-sized group, where annual volume is in the $11-99 mill. range, 90% of the presidents hope to top last year's sales, 4% expect to end up even, 6% see a dip ahead. Average anticipated gain: 8.6%.

For companies whose business is $100 mill. or more, 89% of the chiefs feel sales will rise, 6% figure they'll show no change, and 5% foresee a decline. Average forecasted rise: 2.9%.

When it comes to profits, the presidents are somewhat less optimistic. While overall anticipated gain is 5% (weighted by company size), fewer execs look for any sizable improvement.

Thus, among smaller firms, 45% hope for fatter margins,

THAYER C. TAYLOR—Associate Editor, "Food Engineering"

What Industry Segments Expect on Sales, Profits

Most company presidents in each of the seven product fields expect to chalk up bigger sales this year. But in only four fields, canned, packaged foods, frozens, meat-dairy, did majority of chiefs look for rosier earnings. Here's how the different product groupings shape up:

	SALES			PROFITS		
	Higher	Same	Lower	Higher	Same	Lower
Meat-Dairy	80%	10%	10%	60%	20%	20%
Canners	86	10	4	52	38	10
Freezers	60	30	10	60	20	20
Bakers	66	17	17	41	48	11
Confectionery	75	13	12	50	25	25
Packaged Foods	84	8	8	67	8	25
Beverages	67	25	8	42	25	33

31% expect no change, and 24% see poorer returns. In the medium-size group, 67% expect to be better off, 19% on a par with '60, and 14% worse off. And for the big companies, 50% are optimistic, 44% hope to break even, and 6% are pessimistic.

Behind the grimmer profit outlook is the continued cost squeeze, and awareness that sales will be harder to come by this year if a sluggish economy brakes the rise in personal income or increases the number of jobless.

While food chiefs, by virtue of their jobs, have to lean to the optimistic side, their past forecasts have hit pretty close to the mark. A year ago their crystal balls showed a 5.5% sales upturn—and food-beverage manufacturers' sales (unadjusted) through last Nov. were 3.5% ahead of the previous year's rate. In '59, volume was up 4.1% vs. a forecasted 5% rise.

Harder Oar To Pull

If cheery on sales, food chiefs are grimly aware that competition will be rougher this year. Thus, they're ticketing 9.4% fatter advertising budgets.

This isn't as big a jump as it looks, since a good chunk of it will be eaten up by media rate increases. *Printers' Ink*, advertising trade journal, estimates that advertisers will have to increase schedules 5% just to keep even with '60 levels.

Fact that food companies plan a 9% rise rates special significance considering the overall economic outlook. For this budget item is the first to feel the axe when business heads downward.

No doubt, the heftier ad budgets are a reaction to the threatening specter of private labels—which still haunt planning efforts of food manufacturers.

One leading brewer, noting flabby economic tone of things, feels PLs will become critical because "historically this has been the pattern when the economy softens." And a big dairy outfit reasons thusly:

"Concentration of fewer buying offices offers opportunities to consolidate more volume needs into PLs. And increased ad costs for manufacturers' brands widens the spread between selling price and cost price. It also helps PLs to sell at lower prices, comparatively, and still make more profit."

In a similar vein, a ready-to-eat cereals firm reports "greater concern over a trend to larger margins in the chains. We haven't changed our prices for a long time, but our products are being sold at several cents a package higher than 2 yr. ago. This appears to be due largely to increased store labor costs."

Of course, intensity of the PL threat varies from product to product. Broad predictions in this area, one processor contends, "are apt to be based on wild guesses, wishful thinking, or generalities."

Whose Ox Is Gored?

Also, there are some executives who feel that the future course of PLs will depend more on what the manufacturers—not the chains—do. The vice president of a prominent packaged goods outfit argues that "PL is the result of the desire by larger chains and distributors to create a corporate image same way the manufacturer does. Whether PL (controlled label is better terminology) increase or decrease depends upon the sincere marketing efforts of brand makers to develop programs that will bring to the distributor increased units and gross dollars of profit. Certain manufacturers will suffer, because they are not evolving this type of program. Those who do develop such a program will not lose their share of market."

Along with stronger ad budgets, industry execs plan to hike outlays aimed at improving operations. Half of the respondents said they'll increase technical research expenditures, while the remainder will stay at last year's level. Average weighted increase: 6.7%.

A smaller percentage—41%—targeted bigger market research program, while 57% plan no change, and 2% will cut back. Average weighted increase: 4.4%.

When it comes to divying up the R&D dollar, there isn't much change from last year, except for slightly greater attention for the packaging area. In '61, according to survey replies, R&D spending will be allocated thusly: 48% for product research, 29% for processing, and 23% for packaging. A year ago, the totals were: 49% for products, 30% for processing, and 21% for packaging.

Swear By Market Probing

Obviously, the emphasis put on product research is underscored by the truism that new products are your best key to growth in the competitive food industry. Or, as a dairy exec stated, "Manufacturer will make the most progress in the area where he eliminates consumer dissatisfaction with present products, either by improving existing items or developing new replacements. The market is well glutted with 'me-too' products."

The increase in packaging research reflects the greater burden put on the package by today's self-service marketing, as well as concern over the fact that container costs are representing a bigger share of overall product price.

Despite the comparatively smaller increase planned for market research programs, industry leaders still look to it as critical to future growth. As one packaged goods firm succintly puts it: "Today's

biggest marketing need is the necessity to get greater yield from expenditures."

Pinpointing this generality, a second leader observes that "the three marketing areas showing the best promise of giving the manufacturer more for his dollar are: (1) Increased advertising efficiency, (2) more productive promotional efficiency, and (3) all phases of distribution."

And a third pacesetter sees the drive for greater marketing efficiency influenced by these two key trends: "Expanding total markets for food products, but sharing of these bigger markets with more competitors and more products."

"I firmly believe," another top exec states, "more productive results will best be achieved by market and sales research—knowing who buys what, when and where, and how much they buy. Then, this information must be projected into increased product turnover for distributors."

Naturally, a top objective of market research is to prevent you from being trapped by the obvious as well as keep you one step ahead of what's shaping up around the corner. Along this line, one marketing head feels that "despite established trends to convenience foods—instants, heat-n-serve, boil-in-bag, etc—there will be a counter trend (in '61) toward more catering to homemakers' desire for creativity in home food preparation."

The same official sees these other key trends for '61:

"Intensified efforts to develop greater consumer interest by stressing exotic, gourmet, and traditional American recipes in recognition of up-graded tastes.

"More cooperative-joint promotions by non-competing firms.

"Packaging improvements—and deliberate departures from standardization—to create more distinctive brand images.

"Increased stress on consumer benefits, especially in the area of sound nutritional values."

Modernization Pace Quickens

One of the more striking findings of FE's forecast this year is the indicated strong upsurge in capital expenditures. Respondents (on weighted basis) said they plan to hike capital spending 13.2%.

Last month, Commerce Dept. and SEC said that food-beverage capital expenditures would move up 11% through 1st quarter of '61.

In FE's poll, the bigger the company, the more likely it is to retool in '61. Thus, 27% of the firms with volume of $10 mill. or less planned bigger capital outlays vs. 40% in the $11-99 mill. group, and 50% in the $100 mill. or over category. Smaller firms planned an average 7.7% increase, the larger firms an 11.2% increase.

It's likely that a sizable chunk of the industry's capital outlays will be funneled into cost-cutting equipment. A McGraw-Hill survey showed that food-beverage companies last Sept. operated at 81% of capacity—so there's probably no big pressure to build new plants. And slimmer profit margins also stress the need for more mechanization in the plant.

Another powerful influence on stepped-up capital spending is the flood of new products. More than three-fourths of the companies—78%—plan to bring out new or improved products. Here, too, bigger companies lead the way—with 88% in the $100 million or over planning the step vs. 76% in the small-firm group and 75% in the middle-size range. (END)

Leaders Optimistic on '61

Howard G. Dick
Minute Maid

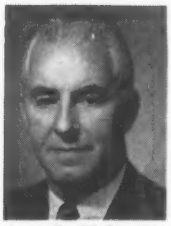
CONSUMER EDUCATION and quality improvement emphasis by both advertised and private label brands is the signal responsibility of food processors. This will prove especially imperative in view of *unprecedented numbers of new products.*

Timely opportunities await us in '61 for wider expansion into international markets as the result of further up-grading of overseas living standards.

QUALITY will play increasing role in retail consumer acceptance, and competition will be a dominant factor. **Population increase will continue.** Improvement in purchasing factor should con*tinue due to rising income.*

Our product will benefit from these factors, along with the increase in G.N.P. We, therefore, look for a good year.

John J. Barranger
Stephen F. Whitman & Son



Lee S. Bickmore
National Biscuit

INCREASED MARKETING AND PROMOTION, more aggressive merchandising, and increased R & D will be key trends.

A good year and higher consumer expenditures for food are expected, but **success will be determined by vigor of marketing and merchandising programs.** Consumers will be looking for better values, more convenience.

Future's success relies on R & D of new products and services.

COMPETITIVE STRUGGLE to produce and merchandise food products profitably means further intensification of R & D programs.

As competition for food shopper's dollar grows more intense, the company that offers the most in new and improved products and packages should have the advantage. **Battle against rising costs calls for more efficient production methods, better labor-management relations, and improved accounting, merchandising, and service procedures.**

Oscar G. Mayer, Jr.
Oscar Mayer

Bigger Population + Rising Income +

Harold W. Comfort
Borden

PRESENT RECESSION, I am confident, will be short as well as very mild. For the food industry, '61 should be a good year.

Cutbacks in capital expenditures budgets in '61 are expected for industry as a whole. However, they should be small and total appropriations still substantial. And as confidence strengthens, actual outlays may approximate budget figures more closely.

Whatever the consumers' decision on disposition of income, the food *industry should benefit—directly, through a larger share of the spendable dollar going for food, or indirectly, through a more highly stimulated economy.* And the vital statistics—numbers of births and families—are even more encouraging.

Frank Armour, Jr.
H. J. Heinz

MORE NUTRITIOUS PRODUCTS and better packaging will be foremost in objectives of all companies.

Sales and marketing strategies will continue to become more ingenious and more complex, as the men behind them strive to create the lowest possible costs from a distribution standpoint.

Food "fads" such as the present weight-reducing products will be of concern to more and more processors. Fortunately, most of the principal food companies are interested chiefly in improving nutrition and the ultimate values to the consumer.

This interest in high quality foods will help make '61 bigger than any other previous year in grocery product sales.

T. M. Sexton
John Sexton & Co.

VOLUME FEEDING MARKET's continued expansion presents both an opportunity and a challenge for '61.

Building the opportunity are larger individual incomes which will help promote the "eating out" habit. School and college enrollments are up. Hospitals are enlarging and America on the road is eating at more and more new diners and motels.

How to provide higher quality, better packaging, and improved service in the face of rising costs will be the challenge for all manufacturers in '61. Modern America likes to dine out; with good products and services available, they'll do more of it.

John R. Rhamstine
Corn Products

INCREASED INTEREST in international operations and progress in world nutrition are two distinct trends that should mark '61.

More American companies will take advantage of market potentials overseas for products formerly made only in America, while more established European brands will enter our domestic markets. Effects are bound to improve living standards and food technology here and abroad.

World nutrition changes will stem from a response by food companies to increasing consumer demand for greater nutritional values in the food they eat. High priority must be given to development and applications of new and existing knowledge.

Morris Kirsch
Kirsch Beverages

EASING THE PROFIT SQUEEZE will be the big industry aim in '61. Every plant department will be scrutinized to eliminate waste and reduce unit production cost.

Much will also be done to clear up consumer confusion over container size. Confusion, added to by indiscriminate use of "King," "Giant," "Family Size," etc., makes it difficult for shopper to estimate price per ounce. Enlightening consumer will increase sales and more efficient use of supermarket space will bring a higher profit return.

Routine and mediocre advertising will be curtailed in favor of more productive food and beverage media appeals.

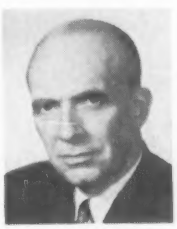
Improved Nutrition = '61 Profits Success

John E. Thompson
Reliable Packing

ROARING SIXTIES have come to a grinding halt.

This year should be a better one for the pork packers. As always, the manufacturer's prosperity will be greatly affected by the hog supply. Increasing supplies should pass the '60 level around the mid-year point. **Things should look pretty good by the 3rd quarter—for those who can survive until then.**

Unfortunately, the pork packer's prosperity is usually out of phase *with the hog farmer's condition. By the time the 3rd quarter rolls* around, the farmer will have his crying towel out and may restrict production. Thus, the old feast-and-famine cycle will start all over again.



George W. Burry
Burry Biscuit

INCREASINGLY COMPETITIVE situation means products of less than average performance on the shelves will have to go. With space at a premium in retail outlets, the pressure will be upon products of mediocre quality and appearance.

Result should be an advance for those who fight for position and have products sufficiently meritorious to warrant space.

Costwise, some raw material prices are likely to decline, but others will advance and the net effect should be equal over-all ingredient costs. Labor and some packaging materials will be higher, but there will be little opportunity to make retail price advances to cover the increased costs.

Paul S. Gerot
Pillsbury

TRANSFORMING NEW CONCEPTS into practical production methods and useful products has become a highly aggressive and important area of competition, especially in convenience foods.

Competition will spur innovation demand not only in new products by new methods but in new applications of standard approaches to convenience and quality.

Innovation will also be felt in distribution. As more products are placed on the market, their all-around success increasingly depends on whether they are in adequate and efficient supply in a market when and where they are needed.

Charles G. Mortimer
General Foods

COMING YEAR should be a relatively good one for the food industry. Even a predicted moderate slackening of general industrial activity does not seem to threaten this prospect.

Long range, the outlook is even more promising. Based on estimates of an increase in population, personal income, and business growth, **industry looks for sales to increase by an average of some $4 billion per year for the next 10-yr., bring total sales figure to an estimated $115 billion by '70.**

Other factors affecting industry will be the character and age shifts of population, growing number of working women, and moves to suburbs. Nutrition will increase in importance.

William B. Murphy
Campbell Soup

QUALITY IMPROVEMENT will be the main result of the normal demand for product innovation during '61 and the next few years.

Life Science discoveries can be expected to come more rapidly than ever before because of expanded research programs; intensified food research by governmental agencies, colleges, and universities; and new scientific equipment and procedures.

Aside from accelerating quality improvements, food research can and will give guidance in how to provide balanced nutrition for the rising population. This problem, increasingly recognized as one of serious proportions, is likely to be solved through research into the many facets of the Life Sciences.

Time for citizens committee to look at our operations—Larrick

Women are serving as part-time consultants for FDA—Williams

Unusual feature of color law is advisory committee —Clark

Natural products are not **ipso facto** safe or nutritious—Ives

Additive Gains and Losses

Uncertainties lessen as FDA speeds handling of problems. Yet serious situations remain, calling for changes in policy and legislation

DIRE PREDICTIONS of product and package casualties made a year ago have not come to pass. And FDA promises that the additives situation as of March 6 will be much better than industry has anticipated.

Yet all is not rosy on the additives front—either in government or industry.

Significant achievements and troublesome problems are pointed up in this report on the food additives conference in Washington, Nov. 28-29. This was a joint meeting sponsored by Food and Drug Administration and Food Law Institute.

FDA Reports to Industry

Larrick—FDA still has a long way to go before it can do the job the American public has the right to expect of it. That is how Commissioner George P. Larrick sees the situation.

"We believe it is time for a new citizen's Advisory Committee to look at our total operation and give us current advice on the steps that should be taken to cope with problems," Mr. Larrick stated.

Yet, much progress is reported by FDA. It has plans for a new headquarters and laboratory building. Field offices and laboratories are being renovated. A special animal research laboratory is planned.

FDA's staff is being strengthened with new personnel and by a vigorous training program. Equipment wise, it is acquiring electronic data processing units to handle the tremendous quantities of data involved in its operations. And in step with the times, FDA is expanding informational programs.

Harvey—Deputy Commissioner John L. Harvey believes that FDA should introduce a bill into Congress to extend the March 6 deadline—where no undue hazard would result. But time would be extended only where safety research is well under way, but cannot be completed before the deadline.

More thorough and comprehensive factory inspection will be sought in another piece of legislation. And amendment of the Delaney clause in respect to animal feeds is foreseen. If an additive does not cause cancer in the animal during its lifetime—and leaves no residue in the meat to produce cancer in man—then the additive would be permitted.

Kirk—FDA has granted extensions to more than 3,000 items, according to J. Kenneth Kirk, Assistant to the Commissioner. FDA has received 265 petitions for additive regulations, has filed 80, and has issued 36 regulations.

Some regulations already have been amended. This proves that a regulation is not a static document, says Kirk. So petitions need not be delayed until every last possible bit of data is available.

Methodology has been a bothersome problem in some petitions submitted to FDA. Here an important breakthrough, according to Mr. Kirk, was achieved in the regulation for polypropylene packaging material. This was set up on a specification basis.

Touching on another question in the minds of industry men, Kirk indicated that the task of considering petitions and issuing regulations prior to March 6 was not entirely an impossible one.

A limited number of regulations can cover a host of packaging or equipment components. The can liner petition submitted by Can Manufacturers Institute exemplifies this approach. What's more, this petition may be expanded to cover closure enamels,

FRANK K. LAWLER— Editor, "Food Engineering"

shipping and storage tank linings. A single petition deals with more than 800 items used in packaging adhesives.

Kirk warned suppliers not to use FDA letters as sales promotion material. Such letters are said to have given a competitive advantage to some companies. These are the ones that asked FDA to support their contention that their packaging material need not be cleared with FDA. Other firms reaching such a conclusion on their own have not asked FDA to concur. So, they have no letters to exhibit.

Clark—Key points of the color additives amendment were given by Franklin D. Clark, Assistant to the Deputy Commissioner:

1. Inclusion of all coloring materials, not just coal-tar colors.
2. Authorization to the Commissioner to list and certify colors for particular uses, and to set tolerance limitations.
3. Conditioning of acceptance of the color additive upon proof that no consumer harm can result from intended uses.
4. Extension of the batch certification program to all color additives not specifically exempted.
5. Automatic disapproval of any color if the substance is found to induce cancer in man or animal.

Here, an unusual feature of the color law is the provision for an *ad hoc* scientific advisory committee selected by National Academy of Sciences. This committee will study, evaluate, and make recommendations on safety problems involving possible carcinogens.

6. Disapproval of color additive uses that will promote deception.
7. Provisions for establishing special packaging and labeling requirements for color additives' safe use.

Williams—Considerable significance should be attached to FDA's new consumer consultant program, outlined by Carla S. Williams, Consumer Programming. Competent women throughout FDA's 17 field districts are functioning as part-time consultants for FDA. They are feeding back consumer opinions, reactions, and needs. At the same time, they are educating consumers in respect to FDA activities.

USDA has sought advice of FDA on how to set up a similar consumer consultant program within its food standards branch.

Consumer interest has undergone a resurgence not seen since the early thirties, Mrs. Williams reported.

A specific demonstration of that interest involves an industry proposal to amend the standards for jams and jellies to allow the use of liqueurs and rum as flavors. Hundreds of individuals and organizations wrote FDA to voice opposition. Result: The amendment never came to pass.

States are setting up consumer counsel programs, too, Mrs. Williams pointed out. New York, California, Massachusetts, Minnesota, Pennsylvania, and Michigan have programs.

This demonstrates how much consumer recognition is on the upsurge.

Industry Speaks Its Mind

Interchange of information and opinion between industry and government was a principal purpose of the additives session. And representatives of industry rose to the occasion.

Oser—Dr. Bernard L. Oser, Food and Drug Research Laboratories, praised FDA for impeccable conduct in dealings of its personnel with industry. He observed that substantial progress had been made toward relieving additives doubts and uncertainties.

Important breakthrough has been achieved in polypropylene regulation — Kirk

Food Law Institute has proved its value as public service — Brady

But Oser mentioned that most of the GRAS lists still are in the "proposed" state, and that more lists would be welcome by the industry. Also, listings of reconfirmed prior sanctions should be published.

Serious problems remain . . .

Many more pertinent points were made by Oser:

The concept of zero tolerances is now tied to analytical methods of appropriate sensitivity. However, the specific method and its sensitivity should be made known in each case.

Other unresolved problems: Official reluctance to apply the GRAS provisions more liberally has been disappointing. And emphasis has been placed on the "general" degree of recognition rather than on safety. As a consequence, insistence on the petition route has lead to the filing of so-called omnibus petitions. These do not contain certain statutory requirements, such as reports of toxicological investigations. Some have questioned the validity of regulations which might issue as a result of such petitions.

A situation still causing some concern among analytical chemists in industry relates to the criteria of practicability of methods for controlling tolerances.

There has been little discussion lately about the use of common vs. chemical names or of the possibility of using functional labeling in lieu of either. In labeling, there still is some uncertainty as to the distinction between ingredients and additives, many of which are identical components.

There is considerable interest on the part of industry in the development of a Food Additives Codex. This would contain the specifications for the identity and purity of food grade chemicals.

Among the most important of the unresolved problems relating to food additives is the interpretation and application of the Delaney clause, which excludes cancer-inducing substances.

There is as yet no agreement regarding appropri-

Homemakers never felt less certain that they can protect family's health—Mrak

There must be provision for reason and judgment. This is urgent.—King

ate dosage limitations to be used in animal studies nor on the extrapolation of the results of such studies to conditions of use by man.

Another question: Suppose a substance induces initially a non-cancerous lesion that is reversible or self-limiting. Should it be considered a carcinogen if cancer is induced in the test animals only as a result of the excessively high or prolonged dosage?

One might also ask whether allegedly carcinogenic substances should be outlawed on the basis of hypothetical evidence, or if only suspect. Also whether the law should be literally construed—that is, each particular substance must be found to induce cancer before it can be proscribed.

Johnson—Where packaging materials stand was outlined by Dr. Robert N. Johnson, Kroger's chief chemist.

As a result of work done by two large container companies on interior protective coatings, a petition submitted by Can Manufacturers Institute has been filed by FDA. And a method for testing finished containers now is being field-tested. Favorable action is anticipated.

Aluminum has prior sanction. Glass presents no problem, because there is no migration. However, all coatings that reduce abrasion may not be okay.

Closures for the most part have the same types of inside coatings as used for cans, and these are part of the same program.

The cellophane petition has been accepted. Mylar polyester film has prior sanction.

The polyethylene petition has been accepted for filing by FDA. Meanwhile the film is used under an extension of the deadline.

Polypropylene has been okayed by regulation. Saran is safe by prior sanction.

Adhesives used on containers for dry foods are the subject of a petition that has been filed and accepted by FDA. In regard to aqueous products, the petition will not be ready for filing before early this year. The adhesive industry anticipates favorable results.

Paper and paperboard manufacturers also are optimistic. Everything is exempt or under a time extension, and the latter are expected to be satisfactorily handled before the deadline.

For waxes, the problem is a control method satisfactory to FDA.

Becker—The much discussed scientific advisory provision of the new color law was interpreted by Joseph D. Becker, Allied Chemical Corp. When convened by the Secretary, a petitioner, or an adversely affected person, the committee plays an assigned role in the resolution by Delaney questions. But the report and recommendations of the committee are not binding on the Secretary.

The Advisory Committee provision is notable in two important respects: (1) The committee has competence with respect to the cancer issue only. (2) The committee is without formal authority to mitigate the strict Delaney prohibition.

Within these limits, the committee may deal with any matter "which requires the exercise of scientific judgement." And it can introduce flexibility into the rigid Delaney system.

Another point: There is a good deal of scientific opinion against the Delaney clause. If that opinion were reflected in a series of Advisory Committee reports, the possibility of legislative revision of the Delaney clause would rest on a surer footing.

Gordon—"In the 2½ years since passage of the Food Additives Amendment, a 'climate' has been produced that hamstrings that legislation." So says Richard S. Gordon, Monsanto Chemical Co.

So, we should look for speedy passage of an amendment to the Amendment. This should embody the principles of a scientific panel, or *ad hoc* advisory board, appointed by the National Academy of Sciences.

When FDA proceeded against organic arsenicals and stilbesterol, both of which had already been approved under the new drug section of the act for use in animal feed, the fears of those who had opposed the Delaney clause seemed justified.

FDA maintained, in the case of the organic arsenicals, that since certain inorganic arsenic compounds had been reported to cause forms of cancer, further extension of the approval of these organic arsenicals could not be allowed.

Another example of arbitrary extrapolation involves a bread emulsifier (Myrj 45). The proposed use level was of the order of 0.3%, or less than 0.05% of the human diet.

No bad effects were observed in animals consuming a diet containing 5%. But at 25% of the animal diet, or 250 times the proposed use in man, a metabolite of the material crystallized out of the urine. This caused kidney stones in about 16% of the test animals. And the stones acted as nuclei for the formation of bladder stones.

Clearance of the material for bread was withheld on this basis: Bladder stones can cause chronic irritation. This can lead to bladder tumors. These occasionally may be malignant.

Additives Amendment should be amended to provide advisory panel—Gordon

There is a good deal of scientific opinion against Delaney clause—Becker

This brings up the question: Is the material itself, rather than the imbalance or secondary physical effect, to be called the carcinogenic event?

We must do something NOW, Mr. Gordon urged, to implement the much talked about "rule of reason." FDA's interpretation of the Delaney clause creates a climate of extrapolation and requirement for proof of a negative. This problem would be alleviated by use of a scientific panel.

Ives—Impact of the additives amendment on research on food technology was significantly interpreted by Margaret Ives, American Can Co.

The fundamental problems generated by administration of the law to new products are twofold: (1) Increased cost of development. (2) A long time interval between developmental work and commercial use of long-term chronic testing on animals.

Because this time interval may be as high as seven years, costs may easily exceed $250,000.

It follows that competition may decrease since

Troublesome questions are answered by authorities representing FDA, industry, science, and consumer. Franklin M. Depew, president of Food Law Institute is moderator.

Panel Answers Questions

A panel of experts representing FDA, industry and science, and the consumer answered questions pertaining to food additives. Among significant answers are the following:

1. FDA has no policy of referring cases from field stations to the U. S. Attorney. But with a few exceptions, about 5%, cases clear through Washington first.

2. It is not part of FDA's basic enforcement program to ask withdrawal of goods from the marketplace. This is sometimes done in case of dangerous items. It is not routine.

3. FDA has no policy to use publicity as an enforcement tool. But it is forthright with the press.

4. It is provided in the law that an additive should serve a technicological purpose before being allowed.

5. After March 6, FDA won't try to round up illegal packaging material on the market. Neither will it sit around a couple of years and let such products remain on the market.

6. Order of listing ingredients on labels is provided for by law. They are listed in order of importance.

7. MCA is making a substantial contribution from its basic budget for educational efforts. It has mailed information to teachers and home economists. It is publishing a basic book on additives and will send it to a key list.

8. No regulation will be issued by FDA for any product unless all components are known.

9. Cherries—and similar ingredients which carry their own color into a mixed food—are not regarded as colors. But beets used to make a product red is color.

10. There is evidence that smoking produces carcinogenic substances. Smoked foods and roasted coffee contain carcinogens.

11. People on committees working for the government must protect trade secrets. They take an oath of office.

12. A food additive is a food because it is intended as a component of food. So there is no doubt about FDA's legal right to inspect plants producing additives. And in the case of packaging materials, where clearance is based upon specifications for the material, plant inspection is essential to make the regulation effective.

13. Prior sanctions are not in a filing system at FDA, whereby they can be found under the formula. FDA may need the name of the firm to whom sanction was given before FDA can make sure that it was given.

14. Prior sanction given to one manufacturer will apply to the same product made for the same purpose by another manufacturer.

15. Additives must be indicated on the label by the common or unusual name. If a product is standardized, ingredients need not be listed.

16. Under the color additives amendment, no provision is made for GRAS. So there is no way to list items generally regarded as safe.

17. Industry representatives say that FDA made a bad mistake in banning Myrj. 45. But under the Delaney clause, an additive cannot be used if it induces cancer in animals.

FDA is not concerned about the definition of a carcinogen, but whether animals on test get cancer and the control group doesn't.

Comment by Oser: Myrj. 45 was fed to rats at 25% level. Minute traces in the animal diet are not likely to produce cancer.

18. Red No. 1 was delisted because it is toxic to the livers of test animals, not because it is carcinogenic.

19. Analytical methods involved in petitions ordinarily are not published. But they are available to anyone interested.

there probably will be fewer new products on the market.

The immediate answer to the problem seems to be increased basic biological research, perhaps at the cellular level. Here rapid growth might decrease the time required to detect toxicants.

Another problem: Elaborate analytical techniques often are required to determine the presence of trace elements at the level of 1 ppm. or less. Development of these techniques is time consuming and requires a high degree of professional skill.

What is being done about these problems in the way of research? Ives reported that academic institutions are enlarging their departments of food technology—or pooling specialists from various departments—to conduct fundamental biological research on the physiological effects of the low-level, chronic feeding.

Industry has increased its emphasis on this type of research to some degree. However, this work it applied, rather than fundamental, research.

A great many warranties are worthless, said Miss Ives. Reason: the customer changes the material in some way to manufacture his product. The original supplier, then, cannot be held responsible.

A material which is GRAS, or has a prior sanction, does not require a warranty.

Analytical laboratories in universities and industrial concerns have acquired gas chromatographs and spectrophotometers required in analytical procedures. These also have been applied to other problems in food technology.

So considerable progress has been made in the study of the constituents of natural products, such as the volatile component of coffee, lemon oil, and vegetable flavors.

Knowledge of the composition of natural products permits the manufacture of synthetic materials having the same general properties. Often only in this way can a product be freed of a toxic natural constituent. Decaffeinated coffee is an example of such a product.

Naturally occurring products are not *ipso facto* safe, nor even wholesome and nutritious. Take rhubarb, with its extremely high level of oxalic acid.

Another positive gain from research related to food additives is in the field of metabolic studies. Knowledge of the site of detoxification, metabolic end products, and amount of actual tissue absorption are all necessary to assess completely the toxicity of any material.

Tips from metabolic tests . . .

Frequently in a metabolic study, one learns that the toxic material is not the original ingested substance, but a metabolic end product.

If such a situation develops, it may be chemically possible to alter the original material so that it is metabolized by a different pathway, but maintain the desirable chemical properties.

The biochemical and pathological lesions developed in a metabolic test are clues to the outcome of a chronic test. In certain instances, enough information has been acquired from the metabolic study that the long-term chronic study has not been required to clear the material.

Undue emphasis has been placed on trace contaminants that migrate from packaging material, according to Ives. And the same goes for pesticide and antibiotic residues of less than 1 ppm.

A test for determining the presence of an antibiotic at a level of 0.005 ppm. in animal tissue has been developed.

This points up the fallacy of prescribing a tolerance with a "practical zero," which implies zero residue when analyzed by a specific method.

Another negative aspect of the additives amendment is undue concern about dietary carcinogenic activity of materials of unknown biological activity at low levels. Attempts to prove a negative are time-consuming and expensive.

Still a third negative lies in applied research. Because of too time-consuming and expensive work, it may not be possible for a company to make a profit on a new item. Certainly, if a profit cannot be made, the item cannot be manufactured.

Consumer Fears Grow

King—In a session devoted to the interest of consumers, moderator Dr. Charles Glen King, Nutrition Foundation, stated that consumer education ought to be expanded. People should understand and appreciate the use of food additives.

Commenting on regulations, King urged there be provision for reason and judgment in all legislation.

The approach taken by FDA in respect to carcinogens would rule out many essential nutrients naturally occurring in foods. There are at least eight mineral elements required for maximum health, and almost all are poisonous. Copper is an example.

Mrak—Emil M. Mrak, Chancellor of the University of California, pointed up the keen interest of consumers in food chemicals. In his work as an assistant to the governor of California on food problems, Mrak has found an amazing amount of fear and distrust of scientists and public officials on the part of consumers.

While homemakers are better educated, they never were less certain that they could protect their family's health, in the opinion of Mrak. The mother can sterilize the baby's bottle. But she can't keep DDT out of the milk.

These homemakers can be freed of fear only through enactment of legislation and establishment of confidence on the part of the people.

Somewhere we have failed in educational procedures. All propaganda put out in California has missed the point, Mrak said.

For one thing, medical people need information in brief form, because they are very busy. For another, we have not gotten to the grass roots in editing and publishing information.

Mrak mentioned that presentation of a paper revealing what canners do to protect food had a profound effect upon a consumer audience. He said that we must have more information of this type. And we should get it to home economists in a way that they can use it, as well as to agricultural extension people.

Clarkson—We have not done a good job of interpreting what we know to the general public, in the opinion of Dr. M. R. Clarkson, USDA. We need to rededicate our resources and brains to achieve educational goals.

Sullivan—Timothy J. Sullivan, Indiana State Board of Health, believes that it is up to state agencies to bear the burden of keeping consumers informed. People want to listen to experts closest to the grass roots. (End)

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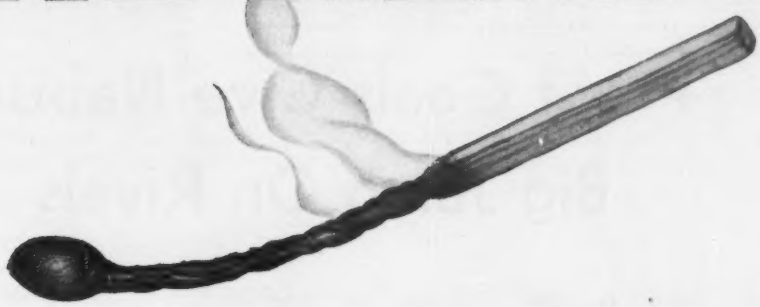

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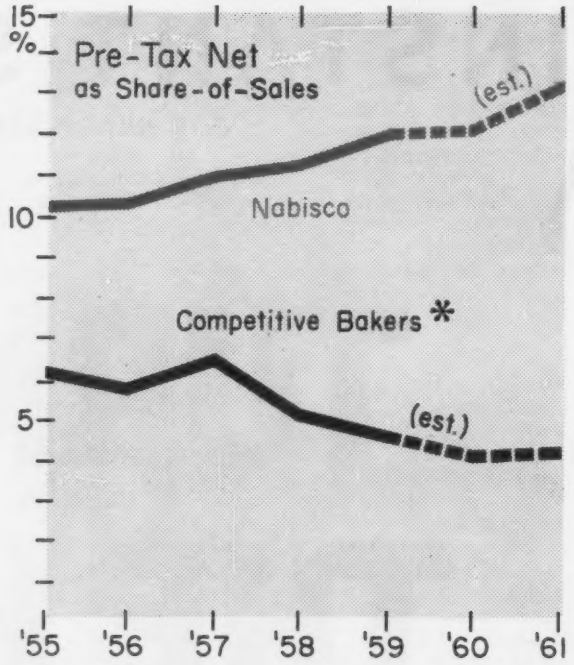
Profit Rise Sparked . . .



*American Bakeries, Continental Baking, General Baking, Sunshine Biscuits, United Biscuit, Ward Baking.
Source: The Value Line Investment Survey

Profit Goals Give Nabisco Big Jump On Rivals

Planned objectives, and strategy for reaching them, eliminates errors in decision-making process. Result: Tighter cost controls, better financial management, more leeway in offsetting crises

ON-TARGET sales forecasting has helped National Biscuit boost its pre-tax profit margin from 10.1% to 12.0% the past 5 yr. while competitors' average margin has sagged from 6.2% to 4.7%. That's because planned objectives in the profit, sales, and cost areas give each Nabisco division a three-way head start on the competition—by providing a complete picture of what is ahead, what can be done about it, and where the company should be a year from now.

THAYER C. TAYLOR
Associate Editor, "Food Engineering"

One aspect of the program which has management appeal is its reduction of the margin of error in decision-making process. As Pres. Lee Bickmore stresses: "Narrow profit ratios don't allow for serious errors in planning. And fewer mistakes are made when we know where we've been and why, where we'll be and how."

One big reason why the forecast has been so productive for Nabisco is because its scope embraces more than obvious sales targets. Bickmore observes that it has contributed to better financial management, shrewder market strategy, realistic operational planning, and the establishment of reasonable profit objectives.

An Early Start

Behind the forecast's fruitful pay-off is the wide-scale, intensive work Nabisco puts into it. Each product division begins preparing its forecast in April for the calendar year to follow. To give you a better idea of how this is done, here is the way the biscuit and cracker division goes about it:

Sales Research Mgr. G. F. Muller starts mapping a tentative objective by reviewing key economic trends and projecting them into the following year. Two indicators in particular that he studies are population and personal income.

Data are broken down by geographic area and balanced against local trends. "For example," he points out, "if a market where steel mills are the big employer

DIVISIONAL SALES MANAGER JONES

	1955	1956	1957	1958	1959	ESTIMATED FOR 1960	1961
POPULATION	3.53	3.49	3.47	3.43	3.39		
INCOME	4.77	4.65	4.60	4.58	4.48		
FOOD	4.35	4.27	4.28	4.26	4.24		
N.S.E.	4.11	4.03	4.02	3.99	3.95	3.93	3.91
NABISCO	5.17	5.28	5.08	5.06	4.95	4.91	4.88
P.I.	125.8	131.0	126.4	126.8	125.5	124.9	124.8

BROAD PICTURE given to each divisional sales mgr. shows sales and economic trends in his area as share of national totals. In 1955, for example, this division's area accounted for 3.53% of nation's population, 4.77% of personal income, and 4.35% of food store volume. Putting these together, Nabisco gives the area a normal sales expectancy (NSE) of 4.11% of national potential. Fact that division actually pulled in 5.17% of company's total business gives it a performance index (PI) of 125.8 — i.e., NSE divided by PI.

MONTHLY TARGET for managers is based on what took place the past 3 yr. plus what is likely to happen as a result of planned programs. Top line shows seasonal pattern of January sales on a 3-yr. base. By dividing month's percentage of annual work days (7.96%) into percentage of annual sales (8.47%) you get a monthly index of 106.4%. But the January promotional activity in the base years was a bit more effective than in other months (.9%), resulting in a seasonal index of 105.5%. Lower line readjusts this index for the forecast year in the light of what Nabisco has planned for that month. Thus, the sales lift from a special merchandising campaign is expected to raise the monthly index by 3.8% to 109.3%. Taking into consideration that the forecast month will have 8.46% of the year's workdays, Nabisco concludes that January should account for 9.25% of anticipated annual sales vs. 8.47% in the base years. Sales Research Mgr. Muller stresses that seasonal index avoids pitfalls of comparisons with historical figures.

3 YEAR BASE - JAN.			
A	B	C	D
% ANNUAL SALES	% ANNUAL WORK DAYS	MONTHLY INDEX A/B	ADJUSTMENT FOR SPECIAL FACTORS
8.47	7.96	106.4	-.9

FORECAST YEAR - JAN.				
E	F	G	H	I
SEASONAL INDEX	ADJUST FOR SCHEDULED PROMOTIONS	REVISED MONTHLY INDEX	% WORK DAYS IN FORECAST	% OF FORECAST YEAR SALES
105.5	+3.8	109.3	8.46	9.25

shows softness, that influences our choice of products to be stressed, what advertising themes we'll use." Or, as Bickmore puts it, "In a depressed market, we're less likely to feature an item as a base for caviar canapes if the consumer is more likely to be eating soup." With this data in hand, Muller works up a fix on the probable total volume of the biscuit and cracker field. After he reviews competitive trends, and gages the probable effect of proposed merchandising and advertising program, he blocks out what Nabisco's share-of-market — or sales objective—should be.

Next, he breaks down the overall goal into objectives for each of the more important products (that call for larger investments) and for each of the 21 geographical sales areas in the B&C set-up. This is important because all products have their strong and weak areas.

During this phase Muller pulls heavily on internal sources for information. As he insists, "A forecaster must know pretty well what is going on if he is to be effective." He also checks with the division manager, who may have a forecast of his own — in which case the two long-range goals are synthesized.

Once the tentative forecast is cast up, it is routed around to the operating divisions, who "cost it out"— figuring what it will take to produce and distribute the called-for tonnage.

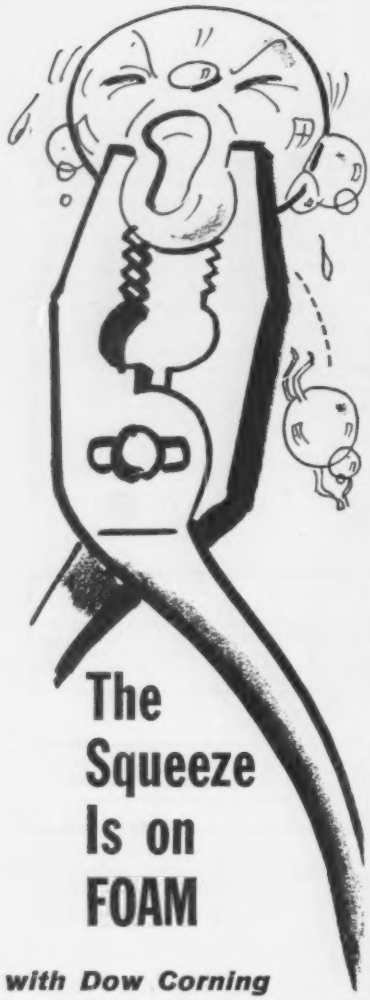
In the final checkout phase, forecast and related costs are passed on to the Budget & Planning Dept., headed by Frank J. Gurgone. Here, the big question—what will our profits be?—gets a close going over. Gurgone, after huddling with company experts in various operations, totes up projected costs of raw materials, packaging supplies, labor, selling, and administration against the planned objectives. This way he gets a good idea of the company's profit potential.

At the same time, Gurgone makes some long-range calculations — as all forecasts are made for 1- and 5-yr. projections. By matching existing plant capacity against targeted sales, he can see whether new bakeries will have to be built to handle future needs. Thus capital expenditures get a strong assist from the forecast.

Also, he's able to estimate the company's future cash position—such as whether a hefty bank loan will be needed to finance future projects, or how much will be available for expansion. Thus, financial planning is helped out.

Heart of the Matter

At this stage, much of the critical problem-solving work takes place. (Turn Page)



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"If things do not look good," Muller stresses, "this is when you adjust operations to a profitable basis—while there is still time to do something about it. Corrective action taken at this point will be a lot more beneficial than the 'panic button' thinking that takes place at a time of crisis. This is when you review your whole cost range, including those which up to now looked irreducible. It's the time to unfix your fixed costs."

After all differences have been adjusted into a workable forecast, the final plan is presented by Gurgone to Nabisco's top-level Executive Dept.—made up of Board Chrmn., Pres. Bickmore, and Nabisco's two senior vice presidents (the executive v.p. post is currently vacant). These execs screen the forecast, and make recommendations if any are necessary.

By September, the final forecast is in the hands of the division managers. The 1-yr. objective they work with has a target for each month (the 5-yr. plan has annual figures only).

In setting the monthly goals, Muller notes the seasonal pattern of activity for that month (computed from a 3-yr. base), because the effects of "unusual" situations (such as promotions, a strike at a competitor's plant, holidays) have to be taken into account. The area forecast given to the 21 divisional sales managers paints a broad picture of economic and sales trends and includes a "performance index" for their guidance (see explanation next to tables on page 47).

Future Harvest

Muller and Gurgone both feel that a sales forecast pays bigger and bigger dividends as experience is gained. Gurgone notes that "as a company becomes more familiar with a forecast, it will put greater demands on it. As a result, the forecast helps out on more operational areas."

Last year, Nabisco introduced a monthly analysis program which flags variations from target. Thus, managers are alerted to potential danger areas that call for remedial measures. An overall benchmark report goes to Executive Dept. members to enable them t keep on top of developments.

Significantly, despite what the general economic trend is, no changes are made in forecast goals once they have been set. Reason for this, Gurgone explains, is "if you make field managers more aware that the home office has a good idea of what can be established, they have more respect for the management capabilities of those to whom they report. **If you cut the forecast to suit the economic climate, you give the weaker manager a crutch to fall back on. That way, you defeat one of the forecast's side objectives—to tell you who your good and bad managers are. The important thing here is that by making the manager more aware of profit accountability you build a better manager."**

This thinking gets strong support from Bickmore. He declares: "While long-range strategy must defer at times to the exigencies of the market, no basic change in that strategy should be implied. A properly developed long-range plan provides the flexibility for tactical maneuvering in a changing market."

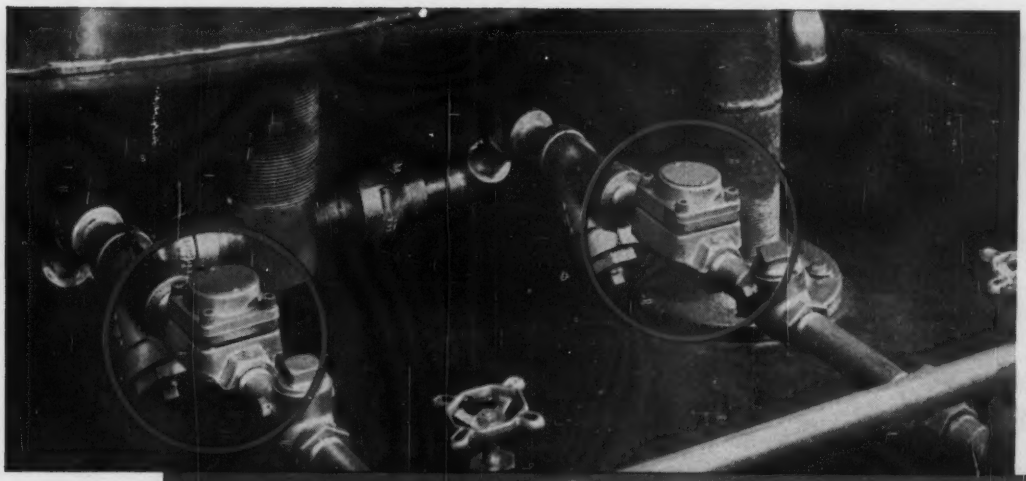
Looking to the future, Nabisco expects a bigger payoff from the sales forecast. Muller strongly stresses that "The first important step in any good planning is to have an accurate picture of where you are, where you're heading. In too many companies, individual parties make their own nebulous forecasts, and take independent action to attain them. As a result, the company doesn't move together toward an integrated goal.

According to Muller, Nabisco's sales forecasts have turned out pretty accurate—with less than a 1% margin of error the past 4 yr. But even more important, he feels, is the way they avoid costly, crisis-inspired thinking. To back this up, he tells of this experience:

"In '58, our sales slipped 2.6%. Then the '59 first quarter was slightly under the '58 level. Under ordinary circumstances, that would have led to panic button decisions to increase certain expenditures, cut back on others—which could have knocked cost controls out of whack. But because the forecast predicted a strong second half upsurge, we kept our trigger finger steady. As it turned out, the last six months in '59 were 6% better than the previous year."

Gurgone chips in with the observation that "any company that wants to improve competitively has to look forward, not backward. You have to get a head start on crises before they take place, not stumble on them and run the risk of making the wrong decision."

(End)



Yarway Series 40 Impulse Steam Traps on stainless steel cooking kettles

YARWAY news briefs

from **Yarnall-Waring Company,** *Philadelphia 18, Pa.*

BRANCH OFFICES IN 19 UNITED STATES CITIES • SALES REPRESENTATIVES THROUGHOUT THE WORLD
STEAM TRAPS STOCKED AND SOLD BY 270 LOCAL INDUSTRIAL DISTRIBUTORS

WHAT'S COOKING?

More than 3 times as much production with Yarway Impulse Steam Traps

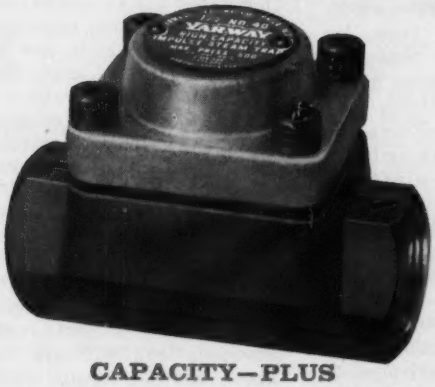
Lady's Choice Foods plant superintendent, Jack McFeron, checks valve on return line from Yarway traps

Main objective of a recent modernization program at Lady's Choice Foods, San Leandro, Calif. was more production—and they got it!

One vital modernization step was the selection of Yarway Series 40 Impulse Steam Traps as a replacement of the old style steam traps formerly used. These Yarway Series 40 traps, designed especially for high capacity applications like the cooking kettles in this plant, were selected for (1) their effectiveness and (2) their small size which enabled them to fit into the new compact piping layout.

Results? Lady's Choice Foods has increased production from 2 batches a day to 7 batches a day.

Can Yarway Impulse Steam Traps help you "cook up" more production and profits? Find out by letting a Yarway Engineer check your steam trapping. Write Yarway now. While you're about it, ask for Bulletin T-1743.



CAPACITY—PLUS

Yarway Series 40 traps feature not only high capacity, but also *high temperature discharge characteristics, excellent low pressure operation, no airbinding, operation against back pressures up to 40%, stainless steel construction.*

YARWAY OFFERS IMPULSE STEAM TRAPS FOR THESE SPECIFIC OPERATING CONDITIONS

AVERAGE CONDENSATE LOADS	EXTRA HEAVY CONDENSATE LOADS	LIGHT CONDENSATE LOADS
Series 60	Series 40	No. 30

ARCHITECTURE of new Dairy Co-operative Association plant at Portland, Ore., symbolizes cleanliness and efficiency of a dairy.

Dairy Co-operative Plant Engineers Unique Advances

Northwestern plant incorporates three major features in its ice cream processing: Padded door, plenum chambers, and mobile machinery

IN ITS $2 MILLION, sparkling new dairy plant at Portland, Ore., the Dairy Co-operative Association has effected some major advances in its ice cream operations. Three most noteworthy achievements are:

. . . **Refrigeration loss** during truck loading is prevented through the construction of a padded door which forms a tight seal with delivery trucks.

. . . **Refrigerated air** is brought into the cold room through a myriad of wall and ceiling perforations thus eliminating drafts.

. . . **Mobile machinery** lends greater efficiency and versatility to the manufacture of ice cream bars, sandwiches, and to other processing.

The new building is of striking, modern design, featuring gleaming glass and aluminum facades. This shine conveys the feeling of cleanliness and efficiency which is symbolic of a dairy operation.

GODFREY LEHMAN
Special FE Correspondent

Padding Stops Cold Loss

Dairy Co-operative receives milk in tankers and cans from its farmer-members, and processes the milk and milk products under the Mayflower brand label.

When the farmer delivers his milk, he backs his truck onto an hydraulic elevating platform which raises the rear end until it is level with the padded door. The truck backs against the foot-deep pads to form a tight seal. Then the doors are opened. Pad surfaces are heated electrically to prevent them from freezing to the truck. Ice cream is delivered to the loading platform by chain conveyors.

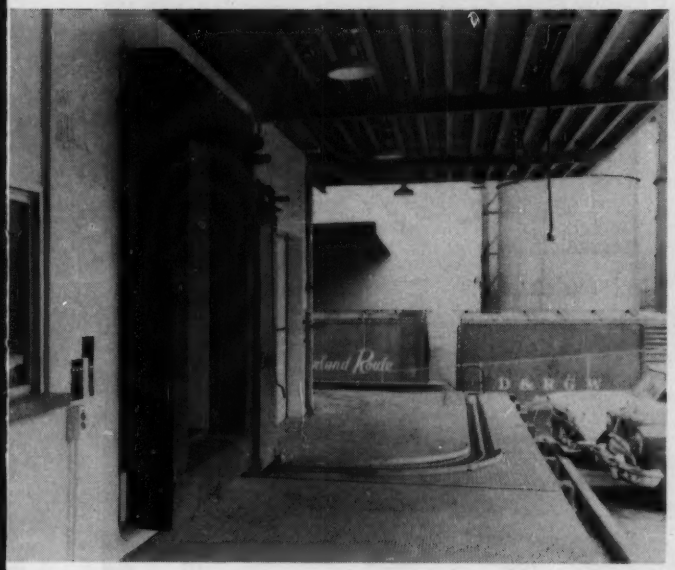
The padded door not only stops cold loss, but it also protects the quality of the ice cream, which remains at 30 deg. below zero from the time it is hardened until it is finally delivered.

Plenum Chamber Cools Uniquely

Inside the cold room, the refrigerated air enters through the walls, ceilings, and supporting pillars, all of which are covered with perforated masonite. Refrigeration ducts are behind the masonite. The entire space between the perforated masonite and the structural walls forms a plenum chamber. Air is forced in from ducts and seeps out into the cold room through the tiny perforations. There are no fans or inlet ducts—and no drafts—within the working area of the room.

The refrigeration unit and ammonia controls are installed above the ice cream room. Exhaust ducts carry the air out of the cold room to the duct room.

The plenum chamber maintains a constant −30 deg. in all parts of the room and at all heights. Since there are no drafts, workmen can



AGAINST PADDED DOOR, at left trucks back up after being raised to door level by the hydraulic lift section of platform. When doors are opened, ice cream can be loaded without any loss of refrigeration.

TANKERS are unloaded and cleaned at the center island, and 5-gal. cans are received at the platform on the right in the plant's receiving department.

remain in the room for longer periods of time than in the standard freezer. There have been few employee complaints about workin the new cold room.

Portable machines are widely used in the ice cream section. The only specialty machine installed permanently is a newly designed automatic bar maker by the Rasmussen Co. of Sacramento. Other specialty machines are rolled in as needed. For example, a sandwich machine may be rolled in for the production of a week's run of sandwiches, and then replaced by a machine to pack quarts. The formed and packaged ice cream is automatically conveyed to the hardening room. Also, conveyors bring cases and 5-gal. cans into the filling room from unloading platforms. Waxed cartons are brought from a storage room above the fillers.

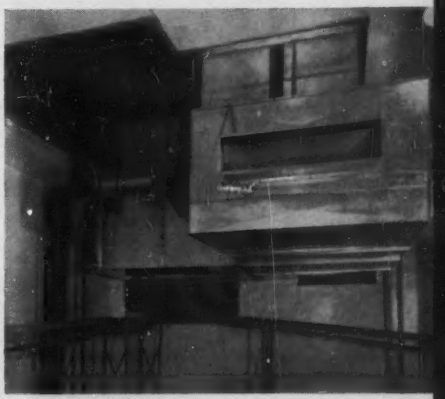
WALLS, CEILING, and supporting pillars of the cold room are plenum chambers, forcing cold air into the room through thousands of perforations, without drafts, warm or cold spots.

Efficiency Paying Off

Dairy Co-op now distributes 300,000 lbs. of milk and milk products daily. Automation keynotes all of the plant's operations. With this volume of production and from the resultant efficiency, the company expects to achieve great savings. Labor costs, alone, will be reduced substantially as a result of this automation, for the new plant requires only one-third as many workers as previous one.

Provision has been made for any possible expansion. For example, the plant now has three Pure-Pak fillers, with space in the 75 x 80 ft. milk filling room for two more if and when needed. Further, all of the company's products are currently packaged in cartons. For diversification, and with an eye on higher sales and profits, the company is considering introducing glass bottles. Adaptation to such production can be made very readily.

Architect Day Hilborn, Vancouver, Wash., designed the plant; George D. Armerding, Mojonnier Bros. Co., Oakland, Cal., engineered the equipment layout; and, Paul B. Emmerick Co. was the building contractor. Wesley Boyce is chief engineer for the Dairy Cooperative Association. (End)



THE ONLY DUCTS within the working area of the cold room are these exhaust ducts leading to refrigeration room.

BOTTLERS CHECK LATEST EQUIPMENT

Top-notch units for production control, packaging, palletizing, and cleaning unveiled at Detroit ABCB show

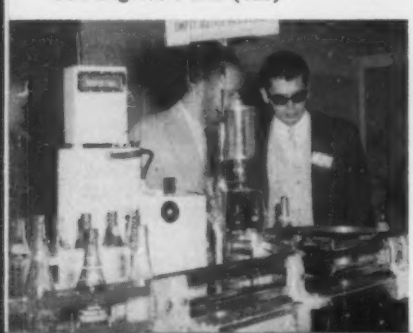
Batching System, Refractometer

PANEL-CONTROL system sequentially batches liquid sugar, water, and base syrup into load-cell weigh tank. It times mixing of batch components, can be CIP'd semiautomatically: Cherry-Burrell Corp. (422)

IN-STREAM REFRACTOMETER has light source, lens, solar cell at one end of transparent rod, mirrored surface on other end. Cell generates millivolt signal whose magnitude depends on refractive index of rod and that of solution being measured. Liquid density is recorded on chart: Minneapolis-Honeywell Regulator Co. (421)

3 Empty-Bottle Inspectors

TWIN-BEAM device has accessory that checks unit's electronic, electrical, and mechanical performance. It flashes warning signal on stand: Mayer Production Engineers Inc. (423)



MULTI-SIZE inspector optically scans bottle bottoms through neck opening at 500/min. Vacuum-type starwheel rejects bottles with any foreign matter: Barry-Wehmiller Machinery Co. (424)

ELECTRONIC CHECKER has interchangeable star turret and adjustable scanner for swift switching to different size bottles. Handles 400/min.: Geo. J. Meyer Mfg. Co. (425)

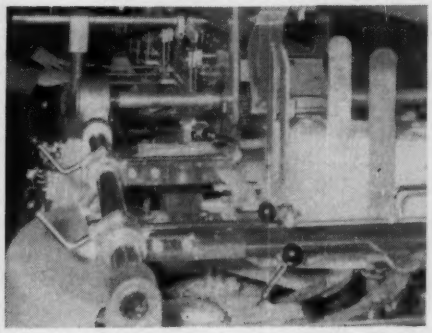
2 Advanced Palletizers

COMBINATION UNIT pallet-loads and unloads 30 cases/min., can be stopped and re-started any time during cycle. Safety cut-off switches prevent jams, overloads, and hang-up: RCA, Automation Div. (426)

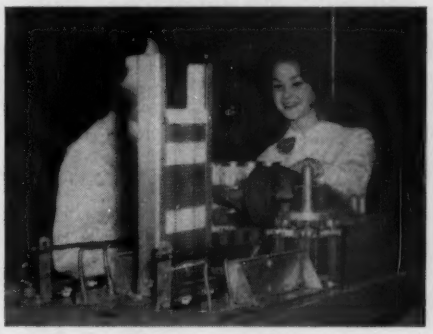
PALLET LOADER takes 33 cases/min., gently loads them row-by-row onto any standard pallet. Adjustable for any size bottle, unit stacks cases up to 5¼-ft. high: Engineered Handling Systems. (427)

3 Special Multi-Packers

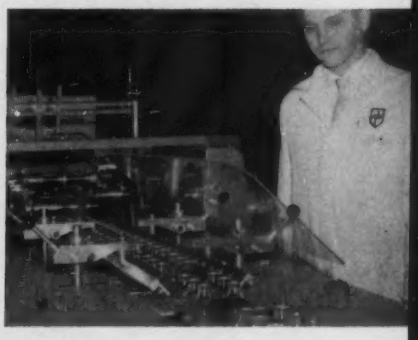
AT 600/MIN., fast-changeover unit packs cans or glass (6-16 oz.) in single or double lines of up to 12 containers. Uses "wrap-arounds" for non-returns: Mead Packaging. (428)



MULTI-PACKER'S polystyrene clips package six cans into "carry-homes." Chain-driven flights move double line of cans to indexing wheels at clip-feed station. Tay-Pak Corp. (429)



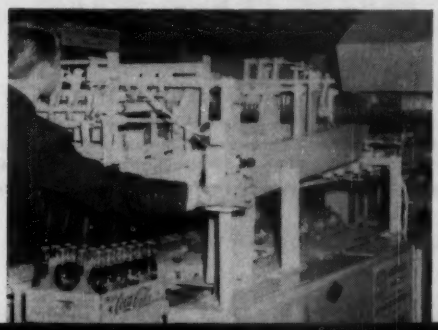
COMPACT unit six-packs non-returnable bottles at 180/min. in dual-locked, non-partitioned carriers. It's easily adapted to double-locked, partitioned packs: Continental Can Co. (430)



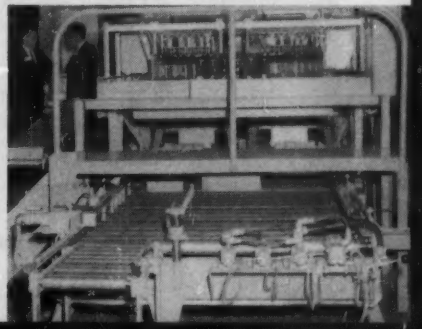
Case Cleaner, 2 Case Packers

HALF-DEPTH CLEANER handles 25 cases/min. Cases on powered belts engage triggering mechanism that actuates air cylinder linked to two lifter arms: RCA, Automation Div. (431)

CONTINUOUS-MOTION unit packs cans and glass (6-32 oz.) at 20 cases/min. Its interchangeable packing heads accommodate containers of various size and type: Geo. J. Meyer Mfg. Co. (432)



DUPLEX PACKER handles cans, bottles, or 6-packs. A single line of cases is split for two-case feed. Containers are then divided into lanes for pack forming: Emhart Mfg. Co. (433)



THE BIG DIFFERENCE IN SPRAY DRIED FLAVORS IS RIGHT HERE

Spray dried, locked in flavors
are nothing more than tiny globules
of concentrated flavor encased in an outer
protective coating which shields it from oxidation,
evaporation and the reaction with other ingredients
which it might contact.
The superiority of FRITZSCHE'S AROMALOK® FLAVORS
is due simply to the fact
that *this core or nucleus is composed of*
the very finest flavoring ingredients made.

AROMALOK®

FLAVORS for use in:

While spray dried flavors are a trifle costlier
than their liquid equivalents,
they offer advantages in certain applications
which can more than offset this difference.
Assured indefinite shelf life and protected
against flavor loss during manufacture
the tendency toward costly overflavoring
is thus avoided. Furthermore,
spray dried flavors are easy to handle and store.
They mix readily and will not separate in the
finished product. They are highly recommended
for use in all powdered products
where flavor retention is a prime consideration.

Let us submit an AROMALOK® FLAVOR *for your product.*

- SOFT DRINK POWDERS
- GELATIN DESSERT POWDERS
- PUDDING POWDERS
- CAKE MIXES
- ICING MIXES
- ICE CREAM MIXES
- SHERBET and WATER ICE MIXES
- PIE FILLER MIXES
- MILK DRINK POWDERS
- CHEWING GUM
- COMPRESSED CONFECTIONS
- PHARMACEUTICAL TABLETS
- TOOTH POWDERS

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A FIRST NAME IN FLAVORS SINCE 1871

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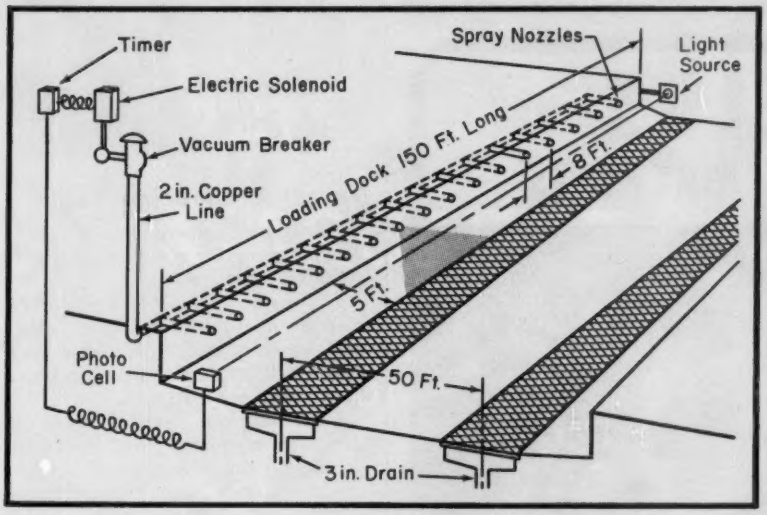
Branch Offices and *Stocks: Atlanta, Ga., Boston, Mass., *Chicago, Ill., Cincinnati, Ohio, Greensboro, N. C., *Los Angeles, Cal., Philadelphia, Pa., San Francisco, Cal., St. Louis, Mo., Montreal and *Toronto, Canada; *Mexico, D. F. and *Buenos Aires, Argentina. Plants: Clifton, N. J. and Buenos Aires, Argentina.

practical ideas

Keeps loading docks clean . . . Advanced oven unloading . . . Unique floor sweeper

BETTER WAY TO CLEAN DOCK-LOADING AREAS



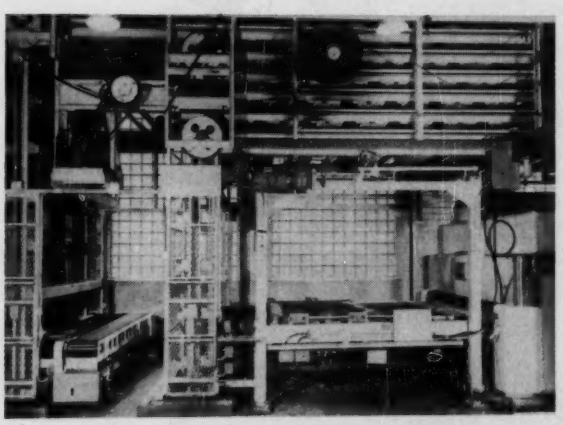
We keep debris-collecting areas at our truck-loading dock spic-and-span and prevent tracking dirt into the plant with the automatic sprinkling system diagrammed above.

It consists of ½-in. spray nozzles spaced 8-ft. apart along the wall of our 26-in. high, 150-ft. long dock. Nozzles are attached to ¾-in. pipes that bleed into a 2-in. line, and they spray water 5 ft. over a 180-deg. angle. Latter flows along a 4-ft. section of the truck-level concrete flooring that slopes from dock wall to iron grate-covered gutters (1-ft. deep). There are 3-in. drains spaced 50 ft. apart.

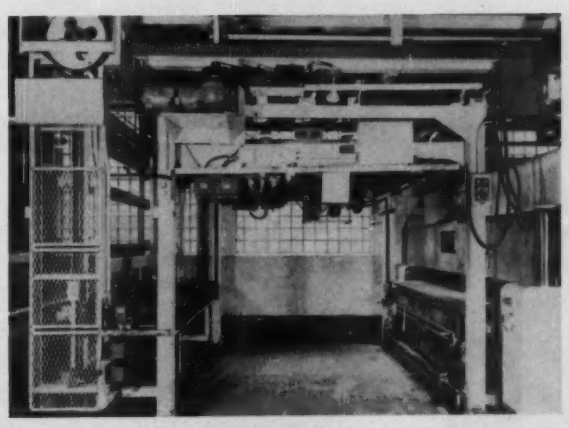
Spraying is simple and automatic. As loaded trucks pull away from dock, an interrupted light beam is re-established to actuate a photocell that opens a solenoid to start the spray. After 5-min., it automatically shuts off.

System flushes crumbs, poppy seeds, and other loose debris from truck-loading into drains. What's more, it also washes mud, snow, and ice that drops from back wheels of trucks.—*M. Asproyerakas, Vp. & Chief Engineer, National Baking Co., Chicago.*

Bakery Automation Provides Unique Oven-Unloading Flexibility



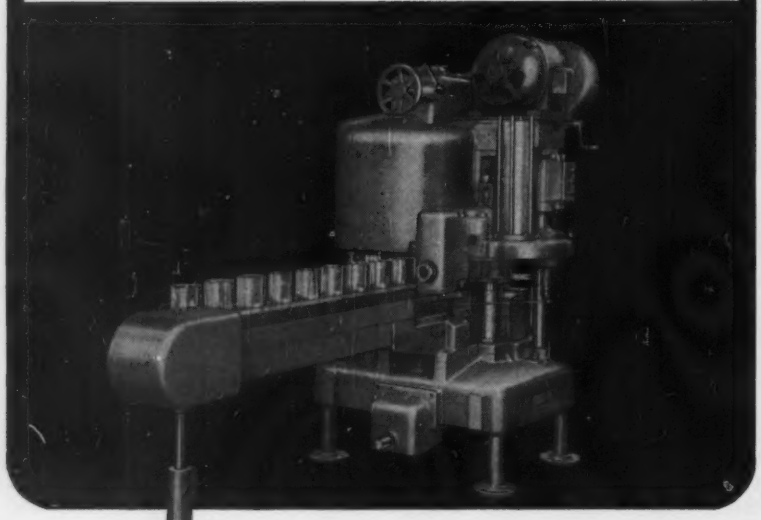
OVEN UNLOADER and transfer system at Horn & Hardart, N. Y. C., provides flexibility in cooling a variety of goods baked in pans or foil. Either pies or products needing immediate depanning are handled by new unit (Baker Perkins Inc., Saginaw, Mich.). In down position as shown, it automatically unloads pies from oven and, under photocell control, transfers them to loading leg of overhead cooler. For access to oven discharge end, touch of a pushbutton raises unit to provide a full. . .



. . . SEVEN FEET OF HEADROOM in less than a minute. Thus, for other goods which must be depanned quickly, oven can be manually unloaded with full freedom of movement for personnel and assorted floor carriers. Unloading and transfer system is raised, as shown, by four elevating screws, one in each of unit's four steel upright legs. This insures positive action and eliminates possibility of accident to personnel or mechanisms. H & H has four other similar units for handling panned products. *(Turn Page)*

Swing To...

ANGELUS
CAN CLOSING MACHINES



Welcome to Angelus Booth No. 5
Annual Canning Machinery & Suppliers Association Convention
Chicago—January 22-25, 1961

We extend a cordial invitation to you to visit the Angelus exhibit, and to see through demonstration and personal inspection the features—dependability of operation, economy and simplicity of maintenance, and low investment costs—that influence canners and can makers the world over to swing to Angelus Can Closing Machines.

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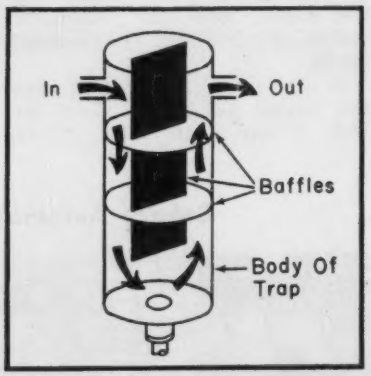
Versatile Cleaning Tool

Here's an inexpensive and simple floor sweeper for glass, paper, dust, cigarette butts, etc.

It's made by nailing heavy-duty mop heads to bottom of a pallet, and treating them with wood-floor oil to pick up dust. Mops leave the floor shiny but not slick.

Unit has cut cleaning costs in our large warehouse, and it is surprisingly versatile. Debris stays in mops even when truck turns corners.—*E. Matchett and R. Wiggins, Pepsi-Cola Co., 2401 N. Walnut St., Muncie, Ind.*



Home-Made Moisture Trap Keeps Air Lines Dry

Here's an easily constructed trap that will keep harmful moisture out of compressed air lines.

As shown in diagram, it consists of a 6-in.-dia. pipe (traps body) about a foot long. Inside the pipe are welded close-fitting vertical and horizontal baffles made of ¼-in. *sheet iron.—FE Staff*

FE Annual Editorial Index available upon request at 35¢ per copy

KEEP FAITH WITH NATURE — GUARD HER GOODNESS

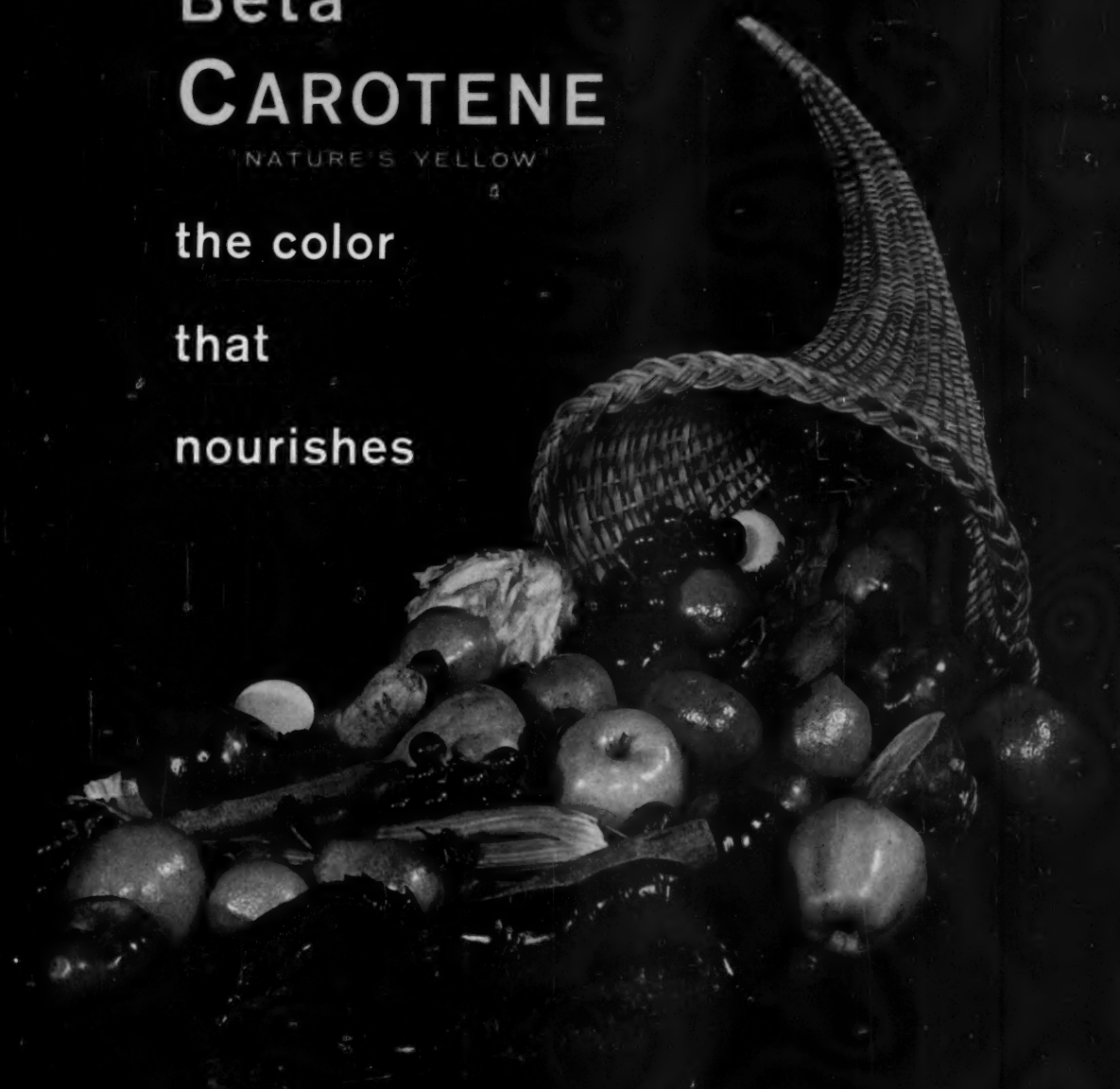
Beta CAROTENE

'NATURE'S YELLOW'

the color

that

nourishes



COMES RIGHT FROM ROCHE

FINE CHEMICALS DIVISION **HOFFMANN-LA ROCHE INC.**, NUTLEY 10, NEW JERSEY

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KEEP FAITH WITH NATURE—GUARD HER GOODNESS

Beta CAROTENE

'NATURE'S YELLOW'

the Versatile Color

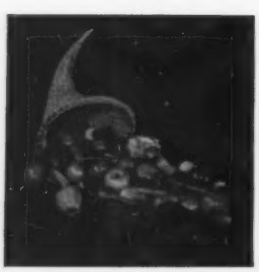
RECOGNIZED
SAFE AS A NUTRIENT—SAFE AS A COLOR

ACTIVITY	*Beta CAROTENE is the Color that Nourishes. Its vitamin A activity is 1,666,666 U.S.P. units per gram.*
+ **AVAILABILITY**	Six practical, convenient forms for every food use.
+ **MISCIBILITY**	In either water-base or oil-base foods.
+ **POTENCY**	Greater color values that count, from a small amount.
+ **PURITY**	Virtually 100% pure. Free from useless extractives or residues.
+ **QUALITY**	Achieved by meeting the most exacting specifications.
+ **SAFETY**	Recognized safe as a nutrient. Accepted in U.S.A. and many other countries.
+ **UNIFORMITY**	Standardized, unchanging, true color, lot after lot. No tinge of green or red.
+ **UTILITY**	Recommended for foods and beverages requiring yellow to orange color.

Add up to *versatility* for Beta CAROTENE
the Color that Nourishes

USE IT FOR
Margarine • Shortening
Salad and Cooking Oils
Mellorine & Ice Cream Products
Pie Crust & Cake Mixes
Baked Goods • Frozen Foods
Fruit Drinks, Fruit Juices & Concentrates
Puddings & Egg Yolk Products
Gelatine Desserts • Confections
Dessert Toppings • Popcorn
Cheese • Soups • Creamed Foods

Send for samples and technical literature.



Vitamins come RIGHT from Roche

FINE CHEMICALS DIVISION **HOFFMANN-LA ROCHE INC.**
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On call are specialists in designing packages and making them perform efficiently in your plant and where your products are sold.

Ask your Owens-Illinois salesman. Call him at your nearby O-I office or write Owens-Illinois, Toledo 1, Ohio.

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AN (I) PRODUCT

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Sign of highest quality for the food industry

The A & Eagle, found on every shipment of Anheuser-Busch corn starch and corn syrup, has always meant highest quality:

A-B® Corn Starches
A-B® Corn Syrup Unmixed—Regular Conversion
A-B® Corn Syrup Unmixed—Intermediate Conversion
BUD-SWEET* Corn Syrup Unmixed—High Conversion

Now, as a result of our continuing product research, we are announcing an addition to our line of corn syrups:

HI-FI* Corn Syrup Unmixed—Extra High Conversion

Maximum sweetness coupled with low viscosity make HI-FI corn syrup an ideal ingredient for the food processor.

We invite your inquiries concerning any of these fine products.

AB

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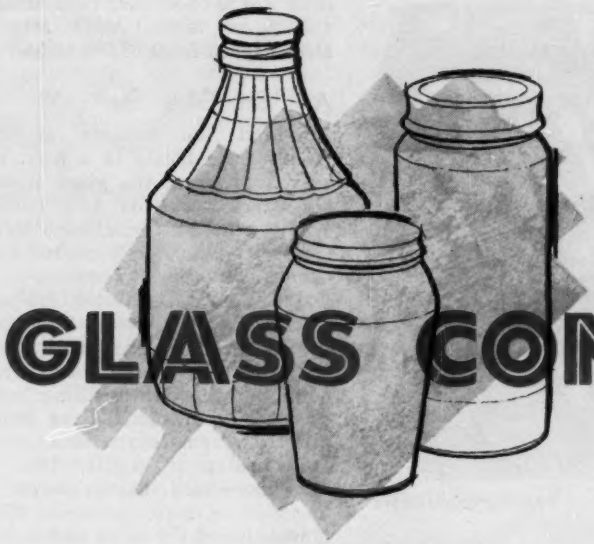
*Trademark of Anheuser-Busch, Inc.



GLASS CONTAINERS

—Cheaper, Lighter, Stronger

Technology adds new features to popular packaging standby . . . And merchandising appeal is getting new twists . . . Here's how today's glass may fill your packaging needs

PRODDED BY the greater burden put on packaging by marketing needs, and the strong challenge of rival materials, glass makers have made big strides in fashioning their wares into strong merchandising tools. Nowhere is this progress more striking than in the food-beverage industry, which gobbles up 41.5% of the glass makers' output.

Improved technology has spawned a steady flow of bottles and jars that perform better on the packing line, shave shipping costs, strengthen in-store selling, and boost product protection. Helping out, especially, are containers that are considerably lighter, yet stronger because of better weight distribution. (See p. 64 for latest improvements in containers, p. 67 for what's being done to upgrade closures.)

Glass has an advantage under the Food Additives Amendment. There is no problem of substances migrating into the food. This, however, does not apply to coatings, such as those used to reduce abrasion. Some of these are expected to be approved, but not all.

Interior enamel coatings for closures are for the most part the same types as used to line cans—and are, in fact, part of same clearance program. Indications are that the petition and test method filed with FDA by Can Mfrs. Institute will bring FDA approval.

A spot check by FOOD ENGINEERING reveals near unanimity among food-beverage outfits that bottle breakage problems are much less a headache than several years ago.

Vice Pres. G. Douglas Reed, McCormick & Co., traces this improvement to "working with glass manufacturers in establishing closer working tolerances, and our own inspection system." Taylor-Reed Pres. Charles M. D. Reed cites "outside coatings which, by eliminating much of the friction, permit easier on-line handling."

At F & M Schaefer Brewing, Vice Pres. Bruce W. Hackstaff feels that "greater control of the glass during manufacturing" has brought dividends. Also, he adds, "our own improved handling and processing methods that reduce temperature and shock hazards have helped."

A Nestlé Co. purchasing agent, E. A. Taylor, traces the improvement to coatings that conform with FDA specs, and built-in material protection that extends to the point of consumer use. He also credits the company's " 'softening' and shortening of its filling lines for ess jar contact."

On the other hand, one of the biggest glass users in the industry is doubtful that glass containers have met the challenge of high-speed, automatic lines. Says he: "Glass breakage is more of a problem today because packing lines are more complicated as the res lt of automatic machinery and increased line speeds. Automatic machinery is less tolerant

FE Staff

GIANT SIZE instant coffee jars point up trend toward more "family" containers aimed at consumer convenience and economy.

of glass whose dimensions are not closely controlled. Obviously, increased line speeds cause more severe impacts, and breakage means more lost production."

Rich Man, Poor Man

Of course, consumer appeal of glass has always made it a popular food-beverage package. Significantly, this attractiveness has a dual nature that few competitive materials can boast. Glass is looked upon both as an economical container for low-cost staples, and as a means to suggest premium quality for higher priced items.

In an era when impulse sales are the key to profits, glass-packed foods seem more successful than others in triggering consumer decisions to buy. Du Pont's latest "Consumer Buying Habits Study," for example, shows that on-the-spot decisions accounted for 71.1% of all glass-packed items as against a smaller 69.5% for all foods in general. Looked at another way, 54.9% of all the glass-packed items that ended up in shopping carts were bought on impulse—against 50.9% for all products in general.

Expanding on the built-in product appeal of glass, manufacturers have slanted their containers to the convenience trend of food-beverage marketing. Typical of the drive to make glass easier to use and handle is the new-type 1-way bottle.

In the beer field, where cans shot up from 18% to 38% of beer package sales in 10 yr., the "Handy" non-returnable bottle, unveiled in '58, has scored some spectacular gains. In '59, for example, shipments of no-deposit bottles topped '58 usage by 15.4% —vs. smaller 9.8% gain for tins. Packaged beer, as a whole, was up only 4.7%.

Upsurge in 1-way jugs carried through in '60. For the first 9 mos. last year, no-deposit bottle shipments were up a spanking 33.6% while the two other container types dropped—tins 7.9%, returnable bottles 0.9%. As a result, non-returnables fattened their market share from 5.5% to 8.3%.

Just whom the 1-way bottle is hurting most is disputable. Glass makers say it is recouping sales lost to tins. But can makers point out that between '59 and '60, in the face of gains by 1-way bottles, their share-of-market held steady (35.9% vs. 36.0%) while returnables dipped from 58.6% to 55.7%.

Ask 'Em, Give 'Em

Behind the success of the Handy beer bottle is a 5-yr. research program the glass industry carried out on two fronts. While Glass Container Mfrs. Institute exhaustively probed consumers, retailers, brewers, and distributors on the kind of 1-way bottle they wanted, manufacturers targeted R&D work on a container that would be lighter, adaptable to existing filling lines, and easily recognized as being different from returnables.

According to GCMI, 36% of consumers said they preferred to buy beer in non-returnables when it was priced the same as tin, and 32% would switch to glass if it was 1¢ less. However, although non-returnables had been on the market since '35, only 7% of the consumers had bought them.

To put the new bottle over, GCMI tackled two special trouble-spots that had plagued earlier 1-way versions, namely, spotty distribution and shopper inability to recognize non-returnables as such.

GCMI's solution: An unusual cooperative advertising plan with the brewers. Beer firms participating in the promotion get back up to two-thirds of their per-case advertising cost if they put up a specified amount of their own ad money and run ads that meet certain requirements.

Because wholesalers pay the freight from the brewery, they're intrigued by the 1-way bottle's

THROW-AWAY bottles in 12- and 16-oz. sizes, now being market-tested by Pepsi Cola, point up one-way's use in soft drink field.

estimated 28% lower shipping cost (including the cost of returning empties). And the Handy bottle narrows the 40% spread between the lighter tin can and the heavier returnable.

Gains and Headaches

As with all new advances, there are some ticklers posed by the new no-deposit bottles. A spokesman for Anheuser-Busch tells FE that "we anticipate some production problems with the lighter weight bottles, especially when we increase line speeds. These containers are more subject to line breakage, and glass makers will have to develop a design that will not be as critical at faster line speeds."

Then, too, glass bottles are still a far cry from the filling speeds of tins which approach 1,000/min. Fastest filling rate cited for the Handy bottle is 600/min., but usual runs are closer to 540/min.

Glass makers are sure these speeds will be improved. They point out that baby food outfits have upped line speeds of the newer lightweight jars to more than 700/min. and are readying 1,000/min. lines.

Looking to the future, glass makers hope to pyramid annual deliveries of non-returnables to 25 mill. gross in the next few years. Their expectations run along these lines: Some 5.8 mill. gross will come from a 10% slice of the beer can market that the Handy jug will recapture, another 12 mill. gross will be picked up from an annual 2-3% switch-over from returnables, and another 7 mill. gross will result from beer market growth.

A second big field where the demand for package convenience has focused interest on lighter, no-deposit bottles is the lush 35-billion unit soft drink market. Here the traditional glass bottle is being challenged by cans, which seem to be making headway after many false starts.

Soft drink can usage skyrocketed 47% last year, according to Continental Can. Some 800 mill. tins were filled by bottlers as against 543 mill. in '59. Industry sources guesstimate that cans now represent 2% of the soft drink market.

Compared to this, growth of 1-way bottles has lagged as the result of spotty distribution and lack of distinctive design. While shipments rose from 125.7 mill. units in '53 to 211.1 mill. in '59, the 1-way glass still represents only 0.75% of all soft drink sales.

To offset the throw-away convenience of soft drink cans, glass industry hopes to repeat the formula that was successful in the beer field. GCMI is field-testing specially designed no-deposit bottles, and is carrying out extensive research to find out the most desirable and practical non-returnable.

Developing a soft drink version of the Handy bottle has its complications. For one thing, there are more than 4,000 bottlers to please, as against some 230 brewers. And the bigger soft drink firms always want their bottle to look different from the competition.

Cost Factors

Key to the battle raging over the ultimate place of convenient-type soft drink containers is the cost factor. Soda pop firms have worked hard to build their product as a low-cost staple, and they're not sure how much more the consumer will pay for the ease of throwing away a container.

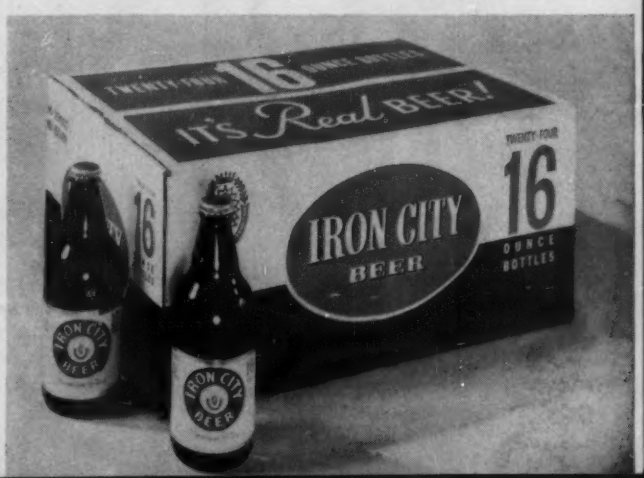
Glass makers, of course, stress the lower costs of the returnable bottle—which averages 20-25 trips. At present, 1-way bottles cost 3¢ apiece, returnables 7¢ (but the 20-25 trips brings the cost below 3¢), and cans 4¢.

Recently, GCMI commissioned a special cost study of 50 bottling and/or canning plants. Executive Director R. L. Cheney reports these findings:

► For a case of 24 12-oz. containers, returnable bottles'/case cost was 80¢ lower than cans.

► No-deposit bottles showed a 13.4¢ cost savings vs. tin.

► Based on a 48¢/case beverage cost, the in-warehouse cost for 1-way glass was $1.513 as against $1.647 for tin.



NO DEPOSIT — NO RETURN amber bottles, debuted in mid-'60, meant added sales for 16-oz. Iron City Beer. (Brockway photo)

GLASS CONTAINERS

Far From Decision

Bottlers themselves are still sharply divided over the cost implications.

Speaking before Dr. Pepper franchised bottlers recently, Pres. Wesby R. Parker said that "Unlike the can, the 1-way bottle does not serve a supplemental purpose, and the industry has not yet come up with such a package that offers either equal or reduced cost to the purchaser. Under the present circumstances we can't gain ground by increasing the initial price of our product while others in the food business are reducing such costs."

When Pepsi-Cola began market testing no-deposit bottles recently, it took the step, a spokesman said, "as an adjunct to normal business in an attempt to broaden our share of the soft drink market." He argued that the non-returnable "will permit sales in heretofore untapped areas (boat docks, picnic areas, etc.) that have benefited from increased leisure time."

What About Tomorrow

While no-deposit bottles dominate the headlines, food-beverage officials still want to see more work done toward developing break-proof glass containers. McCormick's Reed, for instance, asks for "continued efforts to develop a stronger glass approaching an unbreakable feature as closely as possible." He also stresses that "it is important that

manufacturers have a strict inspection program so that the established tolerances are met, thus preventing any return glass or troubles in the packaging line."

Taking a similar tack, Schaefer's Hackstaff puts in a bid for "returnable containers with longer over-all life." Also, he adds, "development of lighter, more compact non-returnables that are more competitive with cans" is an industry need.

Greater standardization is backed by Nestlé's Taylor. Specifically, he points to "standardization of wide-mouth coffee jars . . . which would lead to more efficient handling."

Glass makers, of course, are keenly aware of this need. Pres. Arthur W. Wishart, Knox Glass, predicts that "glass containers in '70 will be almost 50% stronger, more shock resistant, and possibly 20-30% lighter."

Manufacturers point out that today's containers utilize only 1% of the measurable lab strength of glass. Their big goal is to lift that level to 10%. Big drawback, of course, is the cost factor.

Encouraged by what has been accomplished so far, glass makers are confident that the parade of cheaper, lighter, stronger glass containers for food-beverage firms will move at a brisker tempo in the future.

ATTRACTIVE DECANTERS add appeal: Crosse & Blackwell's tomato juice unit has blown diamonds, recessed label area, and horizontal ribbing; Gloria's olive oil cruet carries swirl effect with built-in glass handle; and, Griffin's waffle syrup item features diamond decor and easy handling. (Owens-Illinois photos)

How Glass Is Used

Few other materials have the unusually wide range of use in food packaging and serve the varying requirements more widely than does a glass-formed container.

. . . **As a packaging material,** a glass container is so *inert* that it won't be attacked by any food nor will it adversely affect product.

. . . **As a self-selling aid,** its transparency has made it a brilliant performer when successfully and strategically employed in self service.

. . . **For foolproof protection** from just about anything but light, only the proper closure is needed. And you can easily overcome light effects by specifying colored (amber or green) glass, or by using labels that cover the container's entire body wall.

. . . **For convenience features,** special closures and fitments have been designed for almost any type of dispensing. Just out is a glass aerosol container for easy push-button dispensing certain foods in spray pattern. Details on this new development will appear in the Feb. issue of FOOD Engineering.

GOURMET line of Frank Tea & Spice Co.'s 55 spices, herbs and seasonings has cylindrical jar with four flat side panels to prevent jar turning. (Owens-Illinois photo)

Its Drawbacks

Glass has two limitations. It's heavy and it'll break.

It's in these two areas that considerable researching's been focused. Backed with a $10-million annual R & D investment, the glass container industry's expecting to learn more about glass-strength secrets. It wants to find out: Why glass loses its brittleness and becomes more flexible at extremely high temperatures? Why it gets brittle at normal temperatures? Why extruded glass fibers are so flexible that they can be woven into cloth? Why these fibers are stronger (in tensile strength) than steel? Why the container's inside surface strength's greater than its outside? What's to be learned from rearranging glass' molecular structure?

Answer to any one of these questions may permit glass manufacturers to produce more economically lighter weight containers with added strength to resist impact (internal and external) and to withstand wide temperature differentials.

Taking Off Weight

The glass container's been on a diet since '30—and its weight shows it. By using less glass, the container's cost drops. What's more, a lighter weight container costs less to ship.

An example is the "glass can" (because it's so short—almost without a neck—and round) that's used as a no-deposit 12-oz. beer bottle. It is slightly more than 5½ in. high, weighs 5¾ oz. This compares with 7½ in. and 7 oz. for previous versions of the one-tripper, and 9½ in. and 10½ oz. for the high-neck returnables. (Old returnable back in the diet-less days weighed 15 oz.)

Shortening this new lightweight beer bottle has also shrunk the size of shipping case into which it's packed by almost 25% (in cubic space).

Since glass has been reducing weight, benefits have been passed on to other glass food containers. Manufacturers point to these weight differences: (1) from 6½ to 3½ oz. for baby food jars, (2) from 24 to 15 oz. for milk bottles, (3) from 13 to 10 oz. for ketchup bottles, and (4) from 20 to 11 oz. for certain wide-mouthed jars.

LIGHT-WEIGHT, one-trip bottle was designed for cream. Called Econo-bottle, at right, it weighs five oz. compared to eight oz. for standard pint size. (Owens-Illinois photo)

CENTENNIAL Pickle Jar (right) takes up less space than standard jar (left), but has same capacity. Greatly reduced weight lowers jar and freight costs. (Armstrong Cork photo)

How have container manufacturers gone about getting glass lighter? Principally by improving container designs, by more uniformly distributing glass in forming molds and by using better glass blowing techniques.

Simplifying Design

The more simply designed containers have not only reduced glass-usage requirements but, in most cases, resulted in stronger containers. This is especially true with simple container molds containing a minimum of angular areas. Here, glass flows more uniformly (for more uniform distribution) to reduce the amount of weak, thin-glass areas and vulnerable contact points. Less simply designed containers—like angular-shaped ones—need more glass (than those more spherical) because of their larger surface area and stress or impact points.

The simpler the container design, the speedier it can also be handled on packaging lines. That's why the more simply designed baby food jars can be packed at 800/min. speeds, while bottles are filled at about half that speed.

Glass Manufacturers' Role

Uniform glass distribution has been achieved through advances in glass and container manufacturing techniques. Significant is the adoption of built-in automatic controls for more precise regulation of material flow, temperatures and air pressures.

Much progress has been made in mining, refining and producing raw materials going into glass. A lot's been done to eliminate impurities and to produce "raws" more uniform in particle size—for better control of mixing and melting operations.

Other manufacturing advances: Precise regulation of furnace temperatures (where molten glass is formed); timed, higher speed-feeding of glass into container-forming machine; zoned temperature regulation of containers through annealing lehrs; and, improvements in handling hot glass. Instrumentation has minimized container flaws and thermal shock.

Forming molds are made more precisely for production of better quality and more uniform containers to fit users' tolerances. Container manufacturers have learned that the simpler, more cylindrically shaped molds simplify manufacturing and handling, also make operations more economical. What's more, these molds last longer than the faster-wearing fancy ones that vary in dimensional tolerances.

Better container manufacturing techniques have kept tolerances to within users' "specs." More

within tolerance are container's capacity, height, diameter, finish (for better closure-sealing), crowning head clearance, body-wall contour for label application, heel and shoulder areas, knurls and stipples, position of lettering.

Manufacturers have also adopted in-line quality control devices and manual techniques for continuously checking containers before factory shipment. One manufacturer producing amber-green bottles uses a spectrophotometer to make sure the glass screens out wavelengths in the blue, violet and ultra violet range.

Glass-Handling Advances

Container standardization and quality control (as for baby food lines) are permitting packers to operate at higher speeds with stronger glass. Also, to handle these containers on higher speed lines, equipment manufacturers have been modifying their machines — unscramblers, washers, fillers, and sealers—to reduce glass breakage.

Packers have even modified their glass-handling lines to minimize breakage. Examples: (1) brewers are reducing filler-bottle breakage by replacing high-breakage "knocking" with automatically controlled ultrasonic agitation, and (2) hydraulic motors operating container-handling machines are controlling acceleration and deceleration rates to cushion strain on machine parts and ease container breakage.

Not satisfied with today's jar-handling systems on filling lines, a babyfood packer (Gerber) went on its own to develop an easy-does-it way. It engineered a no-contact glass line to eliminate contact breakage of baby food jars, without sacrificing its 600-bpm. filling speeds. Its principle: To prevent jars from contacting each other from unscrambler through washing, filling and capping. It's done with specially designed mechanical fingers to provide contact-free, vertical movement — and with compartmented conveyors (one compartment for each jar) for safe, horizontal movement.

Coating Protection

Search has been going on for better ways of **surface treating** and **coating** glass containers. Such treatments are extending containers' service life and facilitating their handling through higher speed filling-capping lines.

Surface treatments started when it was discovered that containers smoked in annealing lehrs were stronger than untreated glass. For years, breweries specified sulfur (SO_2) treated bottles to reduce bottle damage. And, when some bottles had a strong sulfur carry-over, some breweries asked for a water-soluble coating that would also offer bottles some degree of lubricity and gloss.

It was at this point that coatings ware applied, and research is continuing to find alternate coatings. Making their appearance were such protective coatings as polyoxyethylene stearate, polyethlene glycol, silicone oils, waxes (non- and semi-permanent), resin-wax combination, vinyls (to withstand aerosol pressures) and even epoxy resins (for cosmetic jars).

Some food firms even silicone-sprayed containers on their filling lines. Practice didn't take hold. Troubles arose when containers became very slippery. Sometimes silicones got into containers, made inside surfaces water-repellent—and adversely affected products (like defoaming beer). Also, water repellency showed up during labeling. Water-based adhesives wouldn't stick to siliconed glass surfaces—unless a new adhesive was used.

Special Container Designs

Significant development has been in the redesigning of glass containers to provide them with individuality and greater merchandising opportunities. Packers are going into fancy designs to make their containers "shopper-stoppers." And, built into some containers, are certain convenience features and label-protectors (the recessed body wall).

There's a trend toward designing certain bottles (as for table syrups and soft drinks) with a pinched "waist" for good gripping. Blown decorations (ribbings, for example) also facilitate gripping. Built-in handles (as for salad oils) are designed for finger gripping and easy pouring. And some containers are even getting so fancy that they're being used for table-serving purposes.

Vinegar bottles are "dressed up" with vertical contour ribbing, which also highlights the product. Decorations, in this case, capture light to provide brilliance to a drab product.

Gourmet spices and herbs are going into attractive glass-table containers which have a square base with blown star on each panel. Shoulder's decorated with a circle of blown knobs. Another type is a cylinder jar with four flattened side panels to prevent it from turning in spice racks or on grocers' shelves and to present a front-label appearance.

Jellies and preserves are also going into unusual table-serving jars. This distinctive server consists of a blown diamond-decorated jar with glass lid attached to container with plastic sealing band. Jars are closed with side-seal closure bearing a distinctive coat-of-arms in three colors against a white background.

A decorated syrup container, introduced recently, is styled for easier, safer handling and pouring. It has attractive blown decorations at heel and shoulder to simulate waffles.

For cottage cheese, there's also a new space-saving jar, with 16 of them occupying the same space normally taken by 9 round tubs. Jar has built-in stacker bottom and stippled surface.

In cream packaging, a new light-weight glass bottle has been designed for one-trip service. Container weighs 5 oz., compared with 8 oz. for standard pint size.

SNAP-ON PLASTIC CAPS eliminate product leakage, ease case stacking, and provide good printing surface. (Hazel-Atlas photo)

More Recent Trends

Glass containers have been mated profitably with plastics. Typical are spice jars with polyethylene shaker-type fitment; a roll-on polystyrene applicator ball

RUBBER GASKET RESILIENCE provides excellent product protection with these quarter-turn lug caps. (Crown, Cork & Seal photo)

within polyethylene holder; and a polyethylene fitment over sauce bottles for drop- and stream-dispensing (with non-dripping, cut-off feature).

"Pebbled" containers are also designed for improving package's appearance. Such raised areas strengthen containers, protect them from container-to-container impacts.

Trend is also toward the designing of more family- or king-size containers, which are being used for beverages, apple sauce, jams and jellies, peanut butter, ketchup, etc. They're providing packers with better market penetration and greater shelf display while, at the same time, permitting consumers to reduce shopping trips and to serve larger families.

They're more economical, too. Container cost represents a basic savings. And, unlike multi-unit packs (with which they might be considered competitive), they require less material—one container, closure, label—no carrier.

Rather recent is the milk and soft drink-bottlers trend toward using returnable bottles with ceramic color labeling. ACL (applied color labeling) is a fired-on, vitreous-color bottle decoration. Refinements in techniques and materials have provided decorations difficult to duplicate in color and permanence. This fine, detailed labeling has won consumer preference, has brought about certain economies. Typical is the elimination of labels and labeling machines as well as simplifying washer-soaker operations.

Large users of glass containers may have their own captive container-making plants like the many food packers operating their own can-making facilities. Indications are in that direction, as witness E. J. Gallo Winery and National Dairy Products Corp. Gallo's new plant is producing 500,000 wine bottles daily. Metro Glass is a division of National Dairy.

Major Gains in Closures

Striking advances in closures have also been made over the past few years and most suppliers promise increased R&D into this integral part of the glass package.

Major closure types for food applications are: Screw cap, rolled-on, lug, pry-off, vacuum, tamperproof, dispenser-applicator, crown—plus various rubber, paper, and cork models for specialized use.

Convenience of opening and reclosing is a major feature looked for by the manufacturer, but other factors are becoming increasingly important. Speed of application, always economically significant, has been stepped up. Tamperproofing, necessary to many of today's quality-minded housewives, is being approached via several unique methods.

And advances in printability, color, and shape or design are adding to the appeal of today's total glass container.

Basis of many of today's closures is the screw cap, a simple principle of continuous corresponding threads that are force-twisted for opening and closing. This type of closure still provides a tight leakproof seal for many food products.

The press-on pry-off cap is one of the best for actual sealing because the complete rim seal overcomes any possible variations in container's rim. And it is an excellent production closure, being applied to containers at very high speeds.

Convenience-minded housewives like a cap that can be easily opened and reclosed after use. The pry-off has to be lifted off with a coin or knife edge and reclosing can be difficult if cap is bent on removal.

One answer to ease of reclosing is the comparatively recent twist-off type of steel lug cap. It has a knurled skirt, externally rolled bead, 4 lugs, and a flowed-in gasket. It opens with a ¼-turn and is closed with up to 50-lb. of torque.

Speeds of sealing or capping jars vary with product and container size. Baby foods are up near 710 bpm. and one supplier is featuring a cap that is rated at 800 bpm. Other twist-to-turn steel caps are being used for ketchup (500/min.), jams and jellies (300/min.), quart pickles (200-250/min.), etc.

However, this cap might cause more trouble than the press-on cap, because of possible variations in cooling that cause peaks or valleys in the lip. But, with proper material or compound facing, the twist-off caps can take up to 0.015-in. variations in the lip finish. Lip, using good sealing compound, sinks into this compound, eliminating possible leakage.

One firm recently introduced a

TWIST-ON CAP hermetically reseals instant coffee jars in 2-, 6,- and 10-oz. sizes without bothersome innerseal. (White Cap photo)

PARALLEL BAR CODING provides tamper-proof feature with this two-piece aluminum cap for baby foods. (Alcoa photo)

"twist-on" cap which is reported to reseal hermetically after each use of instant coffee jars. Unique closure eliminates the need for an inner-seal and has a compound lining which assures an airtight seal when cap is twisted into place. Inner-seals, often wax-laminated, double-ply Glassine, are still widely used to prevent moisture penetration and assure tamper-proof product.

Rubber gasket, however, is still very popular. Ring protects package against warehouse stacking pressures and is a very excellent barrier against leakage. Rubber's resilience also provides good sealing despite minor irregularities in the glass lip.

Aluminum Gains, Too

Moving up steadily in importance is the aluminum rolled-on closure now being used for baby foods, ketchup, and other products. The roll-on is supplied as a blank shell. Shells are rolled against the threads of the individual container neck, providing a perfect fit and an extremely effective seal. All roll-on types can be attractively coated and lithographed in any color or design, and retain a bright, clean appearance.

In the wide-mouthed baby food jar, roll-on is of two-piece construction. During removal, the band rotates freely over a lined disk and makes a ¼ turn before the threads of the band engage the edge of the disk and gently lift it to break the vacuum.

Another roll-on type is aimed at satisfying the high sealing demands of narrow-mouthed items like ketchup and chili sauce, which are acidic, easily discolored by air, and must have a long shelf life.

Also noteworthy in aluminum is a closure for beverage bottles with a turned under double wall which conceals preformed threads. Cap has appearance of molded plastic via lacquered finish.

Interesting tamperproof techniques for roll-ons are on the market as added features for the housewife. For wine bottles and similar containers, there is a roll-on with skirts that extend far below the bead and are attached by a series of bridges. When closure top is twisted, upper portion threads off and the lower band remains on the bottle below the locking ring.

For baby jars from H. J. Heinz, the two-piece cap is top-printed with three parallel bars, which help designate the code. When closure is opened, bars break (center cap), giving visible evidence that the cap has been turned.

Cellulose bands, wrapped over both the closure and container neck, are also receiving attention from packers conscious of need for tamperproofing.

Plastic Makes Headway

What about plastic closures? Polyethylene caps can be produced as screw, snap-on, and plug caps. Then, too, novelty designs and unique dispenser closures add to plastic's appeal. Dripless and spill-proof dispenser closures are only two of the unlimited amount of potential uses for plastic closures. Polystyrene caps have top performance and economy, but coloring this type of closure presents problems.

Work is now being carried out to improve printing on injection-molded polyethylene and polystyrene-type closures. Reason is injection molding is less expensive than compression molding.

The age-old crown for beer and soft drink bottles really hasn't undergone radical change in recent years. It remains an economical and satisfactory product. But plastic is making itself felt here, too, judging by the rising sales of completely plastic crowns. Economical plastic, excellent in dry climates where cork-lined crowns might lose moisture, is gaining in its share of the market. One large crown supplier reports that plastic crown sales in '60 quadrupled firm's '59 total. Too, pressure-formed vinyl milk-bottle caps are receiving considerable use. Vinyl provides good flexibility and seal.

R & D Continued

Despite the overall satisfactory performance of today's closures, considerable R&D is being spent for still better coatings and sealing compounds.

Most of the research is on:

► Developing a cold compound that requires no preheating but has good sealing properties.

► Producing more economical coatings for more acidic product packages that can be thinly applied and at the same time offer better protection to closures from food—and vice versa.

► Improving retention of luster and color as well as printability.

► Changing torque for easier cap application and opening.

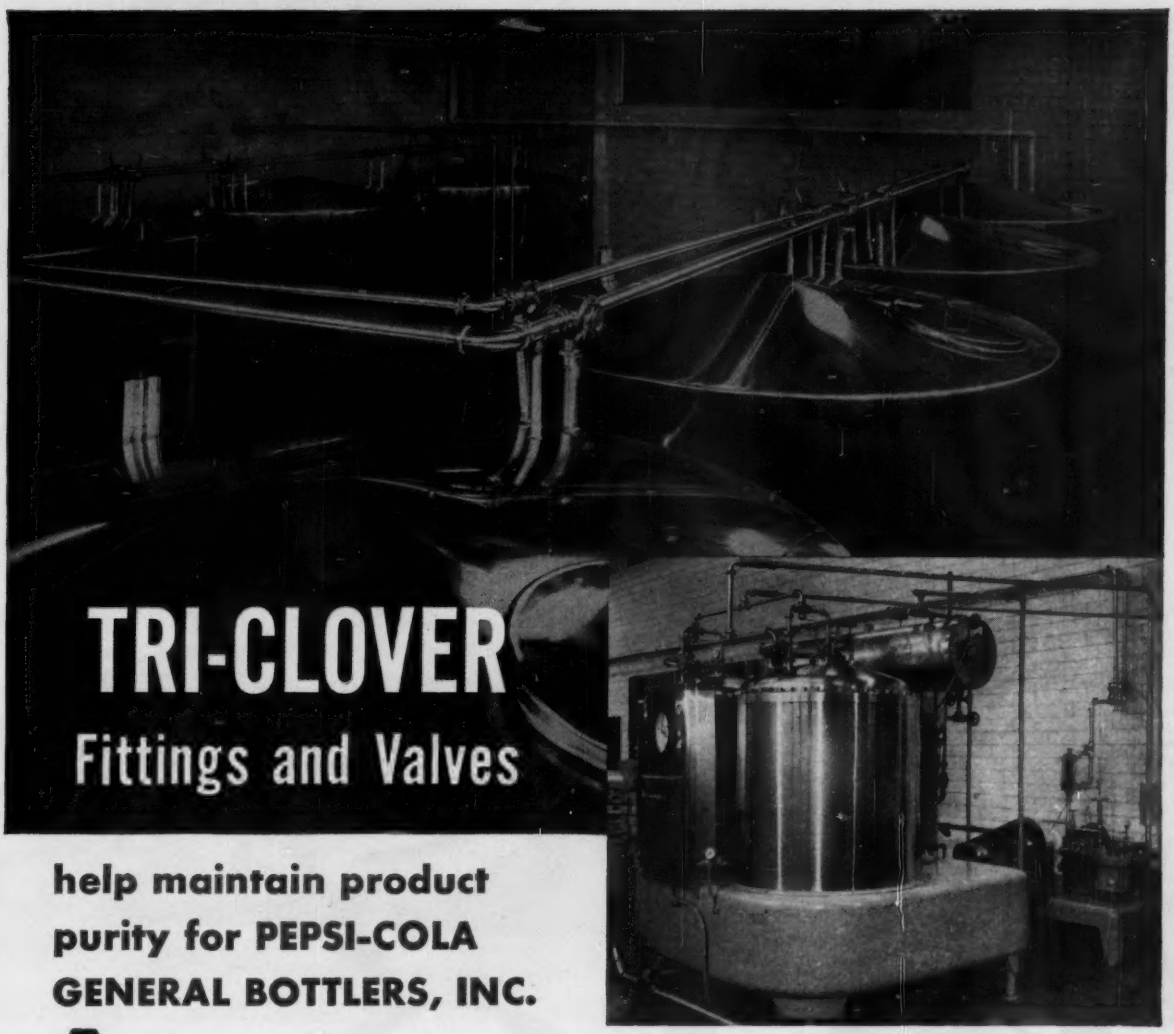
► Making sealing compounds less permeable to slow "micro" leaks.

► Increasing high temperature and pressure performance of coatings during retort sterilization.

► Checking additives in coatings and compounds to insure FDA-approval.

► Work also includes improvements in use of wax-resin compounds combined with paper and aluminum, new vinyl-coated aluminum facings, saran coatings, and the polyethylene-to-paper facings laminated to paper pulp. All of these are geared to produce better total glass package appearance and added resistance for products.

Acknowledgment — FE expresses appreciation to: Aluminum Co. of America, Pittsburgh, Pa.; Armstrong Cork Co., Lancaster, Pa.; Ball Bros. Co., Muncie, Ind.; Crown, Cork & Seal Co., Philadelphia, Pa.; Glass Container Mfrs. Institute, New York City; Hazel-Atlas Div., Continental Can Co., Wheeling, W. Va.; Knox Glass, Inc., Knox, Pa.; Northwestern Glass Co., Seattle, Wash.; Owens-Illinois, Glass Container Div., Toledo, O.; and White Cap Co., Chicago, Ill.



TRI-CLOVER
Fittings and Valves

help maintain product purity for PEPSI-COLA GENERAL BOTTLERS, INC.

Pepsi-Cola General Bottlers, Inc. does an excellent job of keeping up with the demand for their quality product in the big Chicago metropolitan area. Behind the scenes of this large-scale, progressive bottling operation is an impressive array of the most modern equipment and machines.

In keeping with their strict sanitary conditions, a large number of Tri-Clover Division sparkling-clean stainless steel fittings and valves are used in this efficient Pepsi-Cola plant. Most of these are of the exclusive "Tri-Clamp"® design, which permits fast assembly, and provides for fast, easy "in-place" cleaning.

This modern installation serves as another good example of the way in which Tri-Clover fittings and valves serve leading bottlers throughout the country.

See your nearest Tri-Clover Distributor

Shown directly above is just part of the equipment serving the Pepsi-Cola bottling operations in the new Chicago plant. Tri-Clover "standard" type and "Tri-Clamp" fittings and valves are used on this mixing and cooling equipment.

The large view, above, shows some of the Tri-Clover "Tri-Clamp" fittings and valves used to "streamline" liquid conveying operations in and out of the Pepsi-Cola syrup tanks.

LADISH CO.
Tri-Clover Division
Kenosha Wisconsin

In Canada: BEANTFORD, ONTARIO

TRI-CLOVER

Export Dept.: 8 So. Michigan Ave., Chicago, U.S.A. (Cable) TRICLO

S-458

a little

cmc

makes

a

big difference

Here's a topper—cherry, whipped toppings, sprinkles, ice cream—enough to make any young man's eyes pop. In whipped toppings, cellulose gum, Hercules purified CMC, is used as a stabilizer.

Hercules cellulose gum is finding ever-increasing uses in a variety of food products because of its purity, consistent quality control and dependable supply. If you are a food processor you probably know about CMC. If you want to know more, we'll be glad to send you complete technical information on your requirements and work with you on your specific formulation if you request. For further assistance, write:

Hercules Cellulose Gum

VC60-9

Virginia Cellulose Department

HERCULES POWDER COMPANY

INCORPORATED

Hercules Tower, 910 Market Street, Wilmington 99, Delaware

Marketing Signals

Flood of new products may turn into trickle . . . Bets on sales 'team' . . . Nutrition drive gains

Will Chains Kill The 'Golden Goose'?

It's a well-accepted truism that the dazzling array of new products has been a big factor behind the food-beverage industry's annual record sales. But this takes a hefty amount of financing—for R&D, distribution, and supporting promotion efforts.

Of late, makers of advertised brands have been asking the chains: **What happens if me-too private labels take the incentive out of new products?** Thus, Neil McElroy, Procter & Gamble chairman, warned the recent National Assn. of Food Chains meet that "there is a serious long-range question as to the point at which growth of private brands will have drawn vitality from the research and marketing process so that the industry's entire growth pattern may begin to bog down."

Quaker Oats Tries New Selling Concept

Starting this month, Quaker Oats blocked out another step in its long-range marketing revamp. Following 2 yr. of testing, company is switching its field forces to a team concept whereby salesmen will report to new territory managers rather than to district heads as heretofore. Also, in each district, newly-created sales development managers will concentrate on training retail reps and handling administrative duties.

Intra-company competition gets a big play in the new plan. Sales teams in each district will compete against one another on quarterly basis, with cash bonuses going to group that racks up best volume record. Aim is to weld TM and salesmen into a coordinated unit with mutual goals.

Wall St. Hopeful On Food Industry

Profits will rise faster than sales this year for food-beverage firms, according to "The Value Line Investment Survey," well-known brokerage house.

Dairy outfits will pace the field with a 10% gain in net, 5% rise in volume, the survey predicts. Other industry segments will do as follows: Food processors—sales up 5%, net up 8%; baking—sales up 5%, net up 7%; confectionery—sales and net up 4%; milling—sales up 5%, net up 8%; and soft drinks—sales up 6%, net up 9%.

Hunt Pegs Product Data to Buyer

Pressure-sensitive labels are being used by Hunt Foods salesmen to make sure that important buying committees have needed information on new products and packages. Applied directly to the package, label includes following information: Product name, pack, case weight, net contents, FOB point and price, and approximate delivered price.

Albert J. Crosson, Hunt's gen. sls. mgr., says "Initial studies have proved new labeling system to be remarkably effective. Since it can't be removed from the package, label (Avery Label Co.) provides a concise—but complete—summary of everything the decision-making retailer needs to know."

Push Nutrition on Three Fronts

Bread makers plan to emphasize nutrition themes on a wide scale this year to take advantage of the 20th anniversary of bread enrichment and to combat food faddists. Many will tie in with the Wheat Flour Institute's "Enrichment—The Quiet Miracle" promotion which will celebrate the start of bread and flour enrichment back in '41.

A Bakers of America spokesman also warns that, to rebut weight control gimmicks, bakers should promote "sensible dieting plans that include bread and other bakery products." He also notes that food faddists "are becoming more vigorous in their anti-bread campaigns and their drive to sell their own specialty products."

Keeping Profit Plans On The Track

Realistic goals that don't stretch too far in the future, and a steady flow of information on the current status of profit objectives. These are two essentials in successful profit planning, says Pres. James B. Brennan, of Dairypak Butler.

Writing in a new American Management Assn. report, "Financial Planning for Greater Profits," Brennan warns that "the profit plan must be limited to a realistic span of time." And, he adds, the reports must keep the chief executive officer informed as to (1) how much money the company is making or losing, (2) how close this is to objectives, and (3) why this is happening.

BRIEFS

More co-op advertisers: National Assn. of Retail Grocers reports that 63 of top 100 national advertisers now engage in co-operative advertising vs. only 51 two years ago.

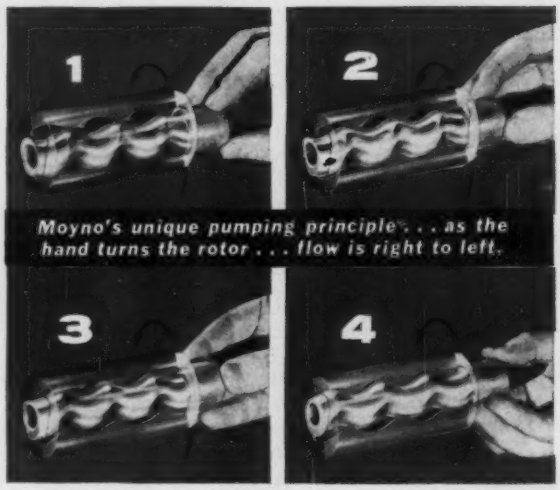
Chain stores look for sales gains of 5-8% in '61, reports Paul J. Cupp, chairman, National Assn. of Food Chains.

Switch in ad strategy finds Pet Milk joining growing list of food firms shifting budget emphasis from TV to print.

← CIRCLE 70 ON READER SERVICE CARD

MOYNO® FOOD PUMPS *help the Green Giant keep the kernels whole!*

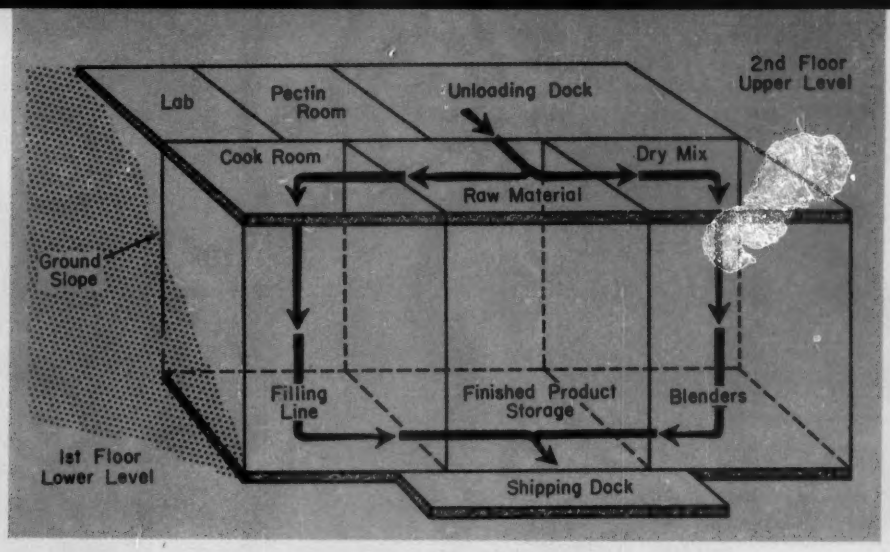
He's very fussy about the appearance of Niblets Brand corn, so Green Giant Co. uses Moynos to keep the tender kernels whole. Moyno's "progressing cavities" move all foods smoothly, without disintegration, pulsation, aeration or agitation! Variety ranges from thin soups to heavy peanut butter to chunky potato salad. Moynos keep foods pure, too! All wettable parts, except stator, are stainless steel. Stator can be stainless, synthetic rubber, odorless bakelite or other material. Smooth pumping elements can't lodge particles where bacteria might thrive. And Moynos can be dismantled, cleaned and be back on duty in minutes! Moyno food pumps are available in five sizes with capacities to 175 gpm and pressures to 75 psi. Write today for new Bulletin 100-FE.



Moyno's unique pumping principle . . . as the hand turns the rotor . . . flow is right to left.

ROBBINS & MYERS, INC., Springfield, Ohio

Fractional and Integral HP Electric Motors • Electric Hoists and Overhead Traveling Cranes • Moyno® Industrial Pumps
Propellair® Industrial Fans • R & M-Hunter Fans and Electric Heat • Trade-Wind Range Hoods and Ventilators
Subsidiary companies at: Memphis, Tenn., Pico Rivera, Calif., Brantford, Ontario.



GRAVITY - FLOW speeds production. Products processed on upper level drop to first floor for packaging.

Split-Level Design Ups Plant Output 200%

Processor's hillside location provides unique gravity flow that streamlines materials handling

DOES MODERNIZATION of production and marketing pay off for the smaller company too? William Effron of Effron Bakery Supply Co., Poughkeepsie, N. Y., will give you an emphatic 'yes.'

That's because his recent plant redesign has boosted production 200% in about the same working space. And a top-efficient trucking setup now assures economical distribution to relatively distant markets.

Effron's decision to modernize was made rather abruptly when, about two years ago, a fire destroyed his 30-yr.-old plant. What could have been a major disaster was instead turned into an opportunity to design a new plant incorporating:

1. **Latest process equipment for efficient production.**
2. **Sharp quality control.**
3. **Mechanized handling.**
4. **Superior sanitation.**
5. **Lowest-cost distribution.**

J. R. Von BARGEN
Asst. Eastern Regional Manager, Industrial Div., Corn Products Sales Co.

Eighteen months—and $250,000—later, the new plant was in production on the old site. So efficient was its design and work flow that daily production has been upped from 7,000 lb. to 20,000 lb.

Increased capacity was achieved primarily by taking full advantage of a two-level hillside location to streamline in-plant handling. Now, all raw materials are received on the upper level and sent to storage rooms adjacent to processing areas. Product flow in both the dry-mix and cook-room operations is downward, much of it by gravity. Net result is elimination of back-tracking and far greater productive capacity per square foot of plant area.

Two-Level Operation

The new plant is a two-story brick veneer building, 60x100 ft., with a 22x40-ft. "L" at one corner, and 34x46-ft. of new office space beyond the "L" on the upper level only.

Upper floor, which was of wood in the old plant, is now of reinforced concrete, as is the lower floor. This provides easier cleaning, improved sanitation, and a smooth, level surface for fork-truck operation. Two nearby warehouses give additional storage space for raw materials and finished products.

Dry-mix blending and cook-room operations are on two levels at either end of the main structure, with storage areas sandwiched between processing sites. Packaging and finished-product storage are on the lower level. Raw-material storage rooms on the upper floor are also adjacent to a liquid-pectin room, and to a laboratory and experimental bakery.

Dry-blending is completed at one end of the lower floor, directly below the dry-mix equipment. Packing of fillings and other wet products is done at the other end, under the cook-room kettles. Finished goods of both types flow from the ends to center bays, which house product storage, packaging, and shipping areas. Here, all finished products, whether in bags or cans, are palletized for warehouse storage and shipment. Fork trucks handle pallets in the plant and warehouses, and facilitate loading of delivery trucks.

The dry-mix operation has two

HILLSIDE LOCATION simplifies receipt of raw materials, shipping of finished goods. Above: Delivery trucks are loaded from lower-level storage areas. Right: Inbound materials are unloaded by lift trucks at upper level.

unusual features which contribute to high quality of end products, such as cake mixes.

First, there is enough storage space in the mixing room to equalize the temperature of raw materials, such as flour and dextrose. Thus, they go into processing at the same constant temperature. Secondly, in addition to sifting materials prior to blending, Effron aerates and fine grinds them to an optimum particle size.

Raws are placed in a hopper located at convenient height for handling the bags. They are moved from the hopper by screw conveyor to top of grinder, and then by gravity to ribbon blenders on the floor below.

After blending, correct weights of products are metered automatically into bags. Dust from the bagging operation is exhausted into closed-system collectors.

Storage tanks for liquid sugar and corn syrup, used for pie fillings and other liquid products, have the usual sanitation safeguards — forced air circulation, and sterilizing lights. All process water is softened for convenience and uniformity.

The cook room has two 250-gal. kettles, with scraper agitation, for cooking the fillings; and two 100-gal. kettles for cooking of jams and jellies. Kettles are jacketed for steam heating and cooling with 34F. water.

Cooked fillings and preserves are dropped to filling lines on the lower floor, where automatic equipment correctly fills each can. A second machine applies covers and seals the cans. Fillings are packed in No. 10 cans, jellies in 40 lb. containers.

Quality control, according to Effron, is more important than ever, now that the larger bakers do everything by machine. There is less flexibility in their processing, so they require uniform jams and jellies that can always be handled the same way.

Jellies put into ovens in goods to be baked must hold their viscosity, without running, when exposed to heat. On the other hand, they must spread readily without crumbling the baked goods. This calls for accurate control of 'set'.

A prime regulating agent is corn syrup, which controls viscosity of the jelly, imparts stability under extremes of temperature, and helps curb crystallization.

Pre-cooking of fruit maintains rigid quality control over still another important class of ingredients.

Fruit is first pre-cooked, in a digester, under pressure to loosen pits and seeds. It then goes to hydraulic presses which crush the softened fruit. Third step is cooking in a vacuum pan, to retain flavor while reducing moisture.

Vacuum cooking of jellies permits boiling at temperatures as low as 100F, and saves flavor elements that otherwise would be lost in an open cooking process. Rigid control of water softness is also an important aid in avoiding various pectin problems.

Final step is the pulper, where pits and seeds are removed, then fruit is ready for the jelly kettles.

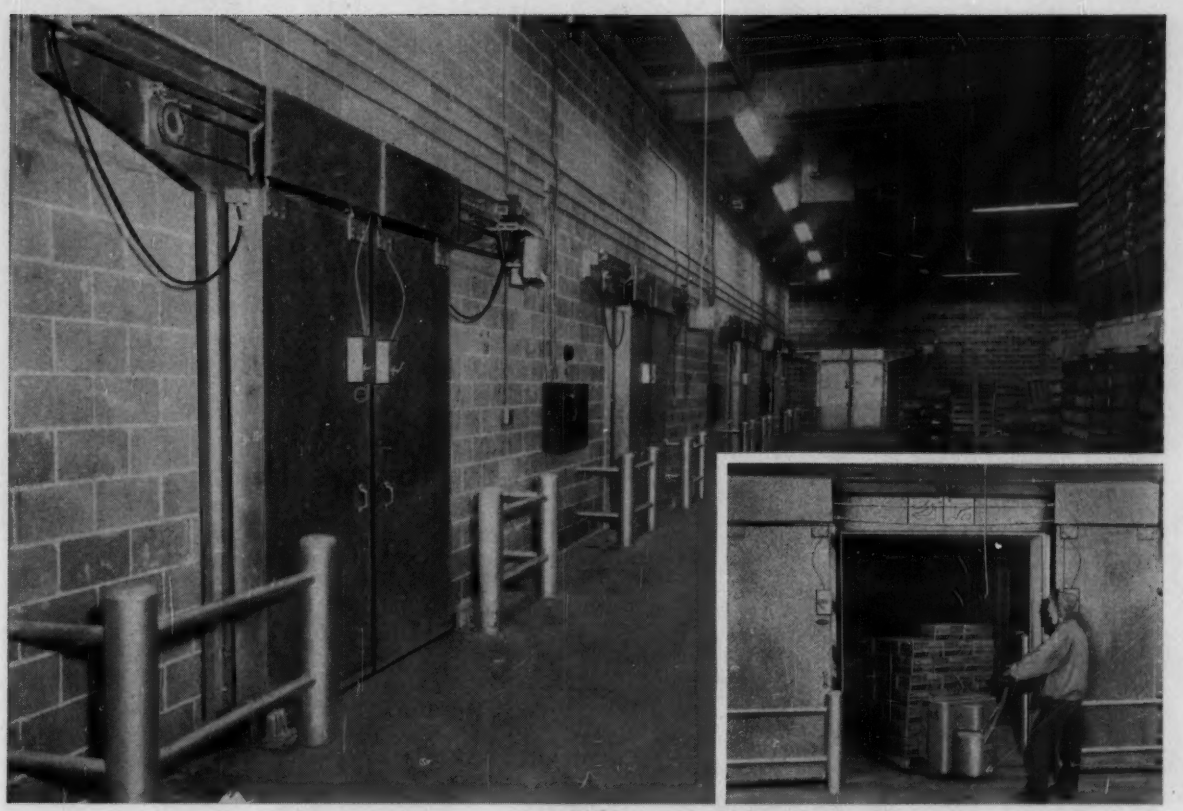
The laboratory and experimental bake room helps maintain a continuous check on product quality. Titrations for pH, tests for moisture content, microscopic examinations, and flow tests for set in jellies are some of the tests regularly carried out here.

Economical Distribution

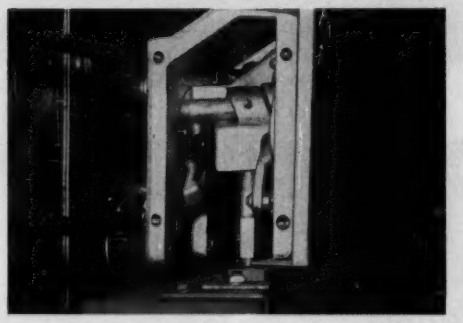
There is one more factor that Effron considers essential to successful operation of a food-processing business—a means of assuring economical delivery of the product. Most such plants are located in large centers, in the heart of the marketing area. Effron's location in a smaller city has certain inherent economic advantages, but an efficient trucking setup is needed to offset the disadvantage of distance from customers.

To meet this requirement, Effron operates a fleet of diesel tractor trailers. Each diesel 'horse,' with two boxes in tandem, has a register capacity of 20 tons. The fleet provides economical transportation throughout a triangular area based on New York, Boston, and Buffalo.

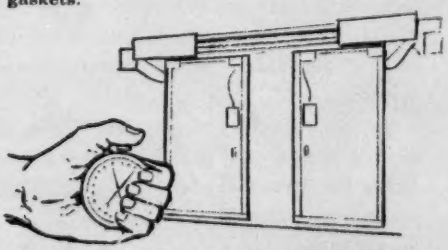
Operating its own fleet permits taking full advantage of opportunities for backhauling. On return trips, trucks bring flour from Buffalo, frozen fruit and empty cans from Rochester, sugar from Boston, blueberries from Maine, and dried fruits and other items from New York, usually running with full loads in both directions. (End)



9 Jamison Electroglide© Doors handle heavy traffic—save refrigeration



COMPRESSION SEAL—refrigeration savings assured by cam lock—in and down action on gaskets.



SMOOTH, SHOCK-FREE OPERATION—exclusive Electroglide spring cushion chain link absorbs inertia on opening, absorbs momentum when stopping.

Insulator: Mid Continent Industrial Insulation Co., Kansas City, Kansas.

Contractor: A. W. Soderberg Construction Co., Wichita, Kansas.

• In Wichita, Kansas, at the big Safeway Cold Storage Warehouse, nine Jamison Electroglide Power Operated Cold Storage Doors demonstrate how they permit high volume, high speed warehouse operation.

Exclusive Jamison features of the Electroglide assure fast, positive operation with safety to personnel.

LEVEL RIDE—opening and closing without gasket wear or drag.

RANGE OF TYPES—available bi-parting and single leaf left or right hand operation.

PADLOCK WITH SAFETY—emergency inside release.

MANUAL OPERATION—possible when power is off.

For Electroglide bulletin—Write Jamison Cold Storage Door Co., Hagerstown, Md.

JAMISON

COLD STORAGE DOORS

CIRCLE 75 ON READER SERVICE CARD

Automatic Model ELF with Current-Miser Control

Does more work per battery charge

than any other electric truck!

FIRST in Imagination...
FIRST with Reality

Here's the lift truck that gives you even greater economy in battery powered electric lift truck operations—and then some! Thanks to Automatic's exclusive Current Miser Control, Model ELF works up to 60% longer in maneuvering operations per battery charge. Battery power previously lost in maneuvering operations through wire or carbon type resistors is now put to work which means more tons of material moved at less cost.

You'll find Model ELF's high torque characteristics a real plus in climbing up to 15% grades under full load. Its fast travel and lift speeds make it ideal for plant and warehouse operations.

Get the full story on the ELF series of electric trucks in capacities from 3,000 to 10,000 lbs. **Write today for specification bulletins on the ELF series.**

AUTOMATIC® AUTOMATIC TRANSPORTATION COMPANY
Division of The Yale and Towne Manufacturing Company
125 W. 87th Street, Dept. A1,
Chicago 20, Illinois

Good "plating" characteristics make lime soft-drink powder look like lime!

Good "flashing" characteristics (left) prevent marbleized appearance (right) as mix dissolves.

Looks good

...from the instant the package is opened!

Makers of soft-drink, gelatin, pudding and pie filling mixes want colors that do more than add taste-tempting eye-appeal to their products as served. Color must look "right" in the dry form and dissolve uniformly and striation-free.

Optimum "plating" and "flashing" characteristics are provided in National Certified Food Colors that are engineered for these specific uses by our food-color research scientists.

Whatever your special needs may be, our ability to understand and meet them is your best assurance of obtaining the most pleasing results with the colors you use. And this experienced extra service is available to you at no extra cost. Your inquiry will be welcomed.

NATIONAL® CERTIFIED FOOD COLORS

NATIONAL ANILINE DIVISION

40 RECTOR STREET, NEW YORK 6, N. Y.

Atlanta Boston Charlotte Chicago Dallas Greensboro
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Distributors throughout the world. For information:
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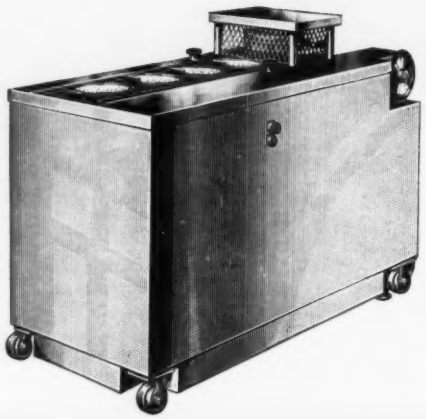
Allied Chemical

MODEL IV-M CLOSURE MACHINE

The ultimate in versatile production equipment for the medium volume food processor is made available with the Model IV-M. Basic mechanical motions and proved production experience have created a machine capable of handling a variety of products in aluminum foil containers with consistent quality closure.



EKCO-ALCOA PACKAGING EQUIPMENT combines speed, simplicity, dependability, versatility

High speed packaging equipment, custom engineered for medium or high volume users, is available from Ekco-Alcoa. It's another reason for choosing our aluminum foil containers. Ekco-Alcoa, leading foil container manufacturer, offers production packaging equipment to handle a variety of liquid or dense products. Consistent quality closures and the ability to handle a wide range of package sizes and shapes are among the outstanding features of Ekco-Alcoa's thoroughly tested and proved packaging equipment. Minimum space, maximum operator safety, easy accessibility for cleaning and maintenance, and variable packaging speeds are other reasons for connecting Ekco-Alcoa equipment to your line. For a complete brochure describing Ekco-Alcoa packaging equipment, write to our Packaging Equipment Division at the address shown below.

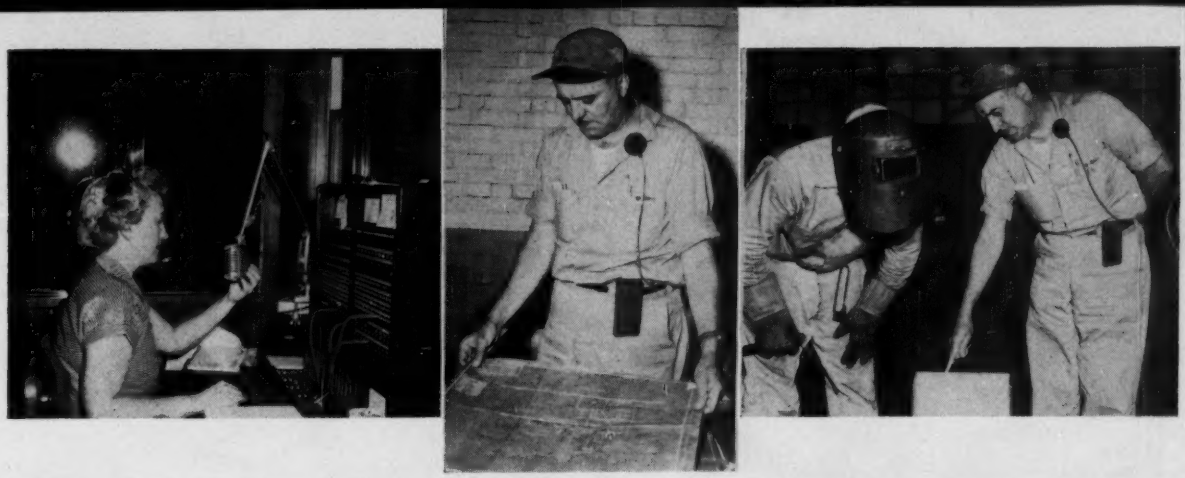
The Plus Container

EKCO-ALCOA CONTAINERS INC.
GENERAL OFFICES: WHEELING, ILLINOIS

EKCO is the registered trademark of Ekco Products Company. ALCOA is the registered trademark of Aluminum Company of America. The corporate name and combination mark, EKCO-ALCOA, is used under license to the manufacturer by each of these companies.

MODEL VI AUTOMATIC CAPPER & CLOSURE MACHINE

The Type VI Machine combines the experience gained over five years of actual production packaging of aluminum foil containers. It is the only mechanical equipment available for automatically capping and closing foil containers that has been thoroughly tested and proved prior to marketing.



TROUBLE IN THE MILL! Transmitter operator at switchboard (left) relays phoned-in message to mechanical supervisor equipped with pocket receiver (center). In short order, he's at scene of trouble, saving costly down-time.

Communications Speedup—Via FM

Key personnel are paged double-quick to trouble spots with one-way transmission system comprised of central FM transmitter and tiny pocket receivers. Valuable time savings cited

YOUR SOLUTION to the problem of providing faster and more efficient intra-plant communications may very well be FM radio.

It has been for us at our Hammond, Ind., plant where a one-way FM (Motorola) voice transmission paging system is saving valuable personnel and production time.

System, a central transmitter and tiny transistorized receivers clipped to the belts of a dozen key people, complements our original "code-call" network of phones. Prior to FM, valuable time was often wasted in reaching key personnel, work stoppages were sometimes prolonged, and blaring horns during night shifts hampered good community relations.

Every proposal to improve paging coverage of our plant with its multi-storied buildings and 80-acre layout was thwarted by prohibitive costs. FM paging proved to be the answer.

In-Plant Studio

A 60-watt transmitter operating on 153.2 mc. is located in our main office. Its antenna projects only a modest distance above the roof line but has sufficient power to penetrate every building. Effective radius of the link into pocket receivers is approximately 10 miles—a distance of little practical value to us but which illustrates the effectiveness and reliability of the signal strength.

During the day-shift, the transmitter is operated by our telephone switchboard operator in the main office. She simply presses a foot switch to put the transmitter on the air, then speaks into a conveniently located microphone.

Here's a typical example of the system in action: The mechanical superintendent wants to talk with the Area I supervisor. He dials the supervisor's desk phone. If he's out of the area, there may be no answer. He may be any place in the plant.

Superintendent will then dial the operator: "Please ask John Doe to call me at 354." On the fifth floor of the mill house, the supervisor hears the operator's request in his lapel speaker. He then goes to the nearest telephone and dials 354.

In addition to the supervisor, 11 other receivers simultaneously sounded the operator's instructions. The superintendent heard it on his own receiver. Others in the hookup are: Operations superintendent, plant protection supervisor, mechanical supervisors in Areas 2 and 3, pipefitter, electrician, construction and labor foremen, and railroad yardmaster. The outside contractor superintendent is also tuned in.

When the day-shift operator closes her switchboard at 4:45 p. m., she transfers radio transmitter control to the head watchman on the night board. He, too, will go on the air with a foot switch and a microphone to page night-shift supervisors.

Six pocket receivers carried by day-shift personnel are handed over to the following people: Operations superintendent, mechanical supervisor, clock-punching watchman, electrician, pipefitter, and millwright. They, in turn, hand receivers to their counterparts on the third shift.

You can get an idea of how well this radio paging system has been accepted by talking with some of the men on the circuit.

Joe Companik, area mechanical supervisor, likes it because he gets word of trouble immediately. "Say a breakdown occurs in a key spot. We may only have an hour or so to make repairs. If it takes 15 min. to locate me, as it sometimes did with the old code-call system, 25%

GERALD G. McGEORGE
Assistant Plant Manager, American Maize-Products Co., Roby, Ind.

Mr. Du

SAYS:

In food plants, we lift grease and soil

We clean to beat the band

We do your work, we clean, we toil . . . we automate instead of hand.

DuBois Chemicals

AUTOMATION PLAN

Did you know that your sanitation program can be automated? DuBois has the products, equipment and know-how to install this program. 95% of cleaning cost is labor. But, DuBois cuts these costs sharply. At a large canner, we're helping them save 42⅔%.

Get more data from your DuBois Representative, listed in Yellow Pages under "Cleaning Compounds".

40 years of cleaning experience at your service.

DuBOIS CHEMICALS, INC.

Broadway at 7th • Cincinnati 2, O.

CIRCLE 117 ON READER SERVICE CARD

Easy to Install
RID-A-BIRD PERCH
Eliminates Bird Problems

Unsightly, unsanitary and costly conditions caused by pest birds can now be safely solved by the unique Rid-A-Bird perch. Easily installed (see photo) and refilled only twice a year, the perch insures permanent removal of sparrows, starlings and pigeons. Successful installations include factories, aircraft hangars, grain elevators, loading docks, warehouses, farm buildings, garages, stores and buildings.

Send for new brochure showing installation details:

RID-A-BIRD, INC.
P.O. Box 22, Dept. FE-1
Muscatine, Iowa

NAME

ADDRESS

CITY STATE

of my time is lost. With radio paging, I receive word right away."

Another example of valuable time saving occurs at night, reports mechanical superintendent Lee McCorkle. "We might have an electrician working on a problem in one part of the plant. A call comes in that serious trouble has occurred elsewhere. Under the old system, if the electrician was in a spot where he couldn't hear the code, someone would have to chase after him. Now, we simply radio."

Plant superintendent George Hand says the radio system keeps him informed of everything that's going on in the plant. "At night I hear a call sending a pipefitter to fix a leak in the millhouse, the electrician to cover motor trouble in dextrine, or the millwrights to something else in Frodex. If I need one of these men in a hurry, I know exactly where they are and what they're working on. I know immediately where all trouble spots are at any given moment."

Aids Fire Brigade

Plant protection and security have also benefited tremendously from the new system. We have a well-organized and highly-trained fire brigade. If the steam fire whistle announces a fire in a part of the plant, the brigade goes into action. Each man, from the chief and his assistant down through the line, responds to his assigned and rehearsed duties. These men all carry pocket receivers, since the brigade is recruited from the list of regular receiver carriers.

On fire signal, the mechanical superintendent does not go to the fire location. Instead, he heads for his desk and telephone, where he can coordinate fire-fighting activities. With the FM radio system, he has a direct link with all members of the brigade at the fire site.

System's maintenance service is handled by a local organization that also handles our yard truck two-way radio system. Rechargeable nickel-cadmium batteries furnish power for the receivers, and each has a spare battery that's held by our plant protection department.

In contrast to the inadequately wired code call system that cost approximately $300/mo. for leasing and maintenance (with seldom more than 80% reliability), our FM system, at an original cost of $6,000, has tremendously added to the effectiveness and reliability of our plant communications in general. (End)

Rotor Lift

—GOOD RIGHT HAND OF THE PROCESS INDUSTRIES!

Wherever free-flowing bulk materials are elevated—vertically or inclined—ROTOR LIFT is the dependable machine most likely to be on the job.

ROTOR LIFT is the *original* enclosed screw elevator; and since its introduction in the '20s, research engineering has kept it the *finest*, with such features as:

- Dust-tight, sanitary
- Compact, space-saving
- Quick opening, fast closing housing
- Moves up to 6,000 cu. ft./hr. quietly
- Stainless steel, aluminum, galvanized or black iron

8 BASIC TYPES

4 DIAMETERS

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Advances in Technology

Seasonal Lactic Acid Development in Milk

Lactic acid development in milk produced in fall, winter, spring, and summer was highest in winter and lowest in spring and summer, when a 16-hr incubation period with a culture of lactic acid bacteria at 21C. was used. Storage of the milk at 10C. (50F.) for 24 or 48 hours before inoculation decreased the activity of the lactic cultures in fall-produced milk, increased it in the other seasons.

Log-average bacterial counts of the raw milk were lowest in winter, highest in summer, and counts increased with storage of the milk at 10C., especially in summer. It was not found that lactic acid cultures activity was due to changes in numbers of bacteria. But proteolysis caused by the bacteria during storage in spring and summer may have affected it.—*Applied Microbiology*, 278-281, May, 1960.

Gas Packing With Simple Equipment

The storage life of dry foods may be prolonged by sealing in an inert atmosphere. Partial evacuation of small containers is effectively used industrially. But for large containers, e.g., 4-gal. can, other methods must be used.

Two techniques, inflation and injection, were tried with the latter being more applicable to tinplate containers because inflation causes distortion of the cans. For granular materials like dehydrated potato strips, a steel tube (i.d. 2 mm.) was inserted to the bottom of the can through a brog hole. Nitrogen was injected at the rate of 1 cu. ft./min. at an inlet pressure of 20-25 psi. The whole operation of gas packing and soldering could be completed in 75 sec.

Thus granular material may be rapidly gas packed using simple equipment—a cylinder of gas and an injection tube. The need for the more complex gas packing equipment (heavy vacuum cabinet, pumps, etc.) is avoided.

The described method has not been applied on a commercial scale but is sufficiently promising to justify further exploration. With a manifold system, the injection method can treat more cans simultaneously and be much faster than the conventional method. — *Food Manufacture*, 420-421, Oct, 1960.

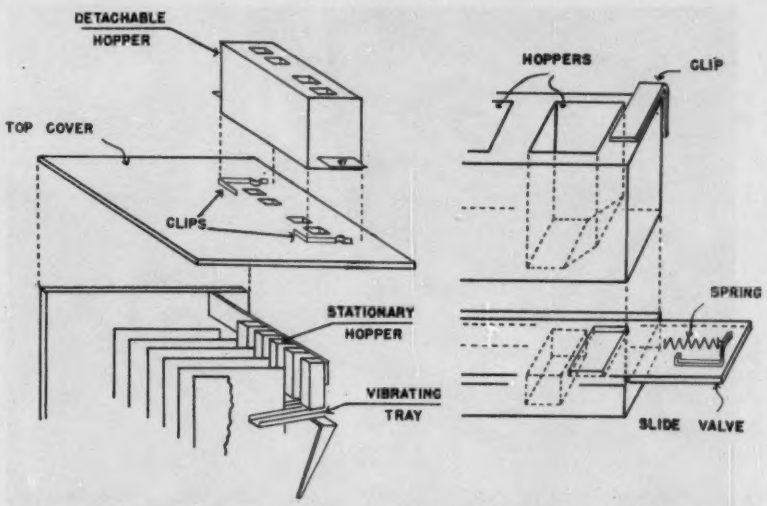

DIAGRAM shows detachable hopper in position over top cover of mill. Cut-away view of hopper illustrates slide-valve action for emptying samples.

Modifications of Milling-Quality Test Increase Testing Efficiency 200%

In the 5-gm. micromilling-quality test (Seeborg and Barmore), elimination of bran weighing has reduced the time for the milling cycle by one-half, thereby doubling the daily number of samples for analysis. Total milling time was further reduced by one-half by loading a new set of samples into hoppers while rolls are in operation.

The second change was effected by means of a detachable hopper equipped with a slide valve kept closed by a compression spring. Hopper is loaded with new samples and clipped into position on top cover of mill above stationary hoppers while samples are still going through breaking operations. When new milling cycle begins, all four compartments of detachable hopper are emptied quickly by pushing slide valve open. Spring then recloses valve.

This new hopper and elimination of bran weighing have upped testing capacity of the micromill 200%. Also, these changes have markedly reduced operator fatigue.—*Cereal Chemistry*, 762-764, Nov., 1960.

Exploratory Experiments on Particle Size in Chocolate

Particle size in chocolate is of great importance — particles must not be too large or the chocolate feels rough on the tongue, they must not be too small or they soak up additional fat and increase fat consumption unnecessarily.

Since there is always a distribution of sizes, the optimal size is such that the tongue does not detect the coarsest ones. Refining the chocolate beyond this point increases the consumption of fat and energy without improving the eating quality of the chocolate. Wet sieving of samples, measuring the 10 largest particles in a sufficient number of microscope fields, and the micrometer screw gauge, determine the coarsest particles in a sample. Wet sieving is useful for determining the proportion of particles over 25 microns, ave. dia.

However, very little is known about the connection between size distribution and the feel of cocoa and sugar particles on the tongue. The micrometer screw gauge test measures the *shortest* diameter of

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a particle, while the feel in the mouth is determined by the *largest* diameter. None of the usual methods of assessing particle size of chocolate is free of objections.

One result of the study was the discovery that during conching the specific surface, the fat absorbing power, and the particle size are all reduced simultaneously. This apparent contradiction is being investigated. — *International Chocolate Review* 15(6), 266-276; (7), 314-324, 1960.

Effective Disinfectant for Large Plant Areas

Beta-propiolactone (BPL) vapor is an extremely effective disinfectant for large enclosures, such as warehouses, laboratories, animal quarters, and similar areas. The vapor inactivates many serious disease bacteria as well as *Bacillus subtilis* var. *niger* spores and *Staphylococcus aureus* cells, with 99.99 per cent effectiveness or better.

BPL is a colorless liquid that boils at 162C. The vapor is non-inflammable and non-corrosive but "fall-out deposits" of BPL may be difficult to remove from some surfaces. BPL is toxic to man, and both breathing of the vapor and contact of it with the skin are to be avoided. Sealing of enclosures is not necessary, but large cracks around doors and windows should be covered with masking tape.

Best results are obtained with a relative humidity of 70% or higher, and temperatures of 24C. (75.2F.) or higher. One gal. of BPL should be disseminated by an insecticide sprayer for each 12,000 to 16,000 cu. ft. of space. A 2-hr. contact time is usually sufficient for decontamination of a room.—*Applied Microbiology*, 8(3), 152-155, 1960.

Ultrasonic Determination of Live Pig Fat

The German Institute for the Breeding and Genetics of Domestic Animals, Gottingen, has developed an ultrasonic method by which it is possible to ascertain, in the live hog, the deposits of fat and the ability of forming lean meat.

A chart produced by this method shows the fat/lean meat pattern of the animal in the same way as a pattern drawn from the carcass so that the yield can be reliably predicted.—*Die Fleischwirtschaft*, 12, 447, 1960.

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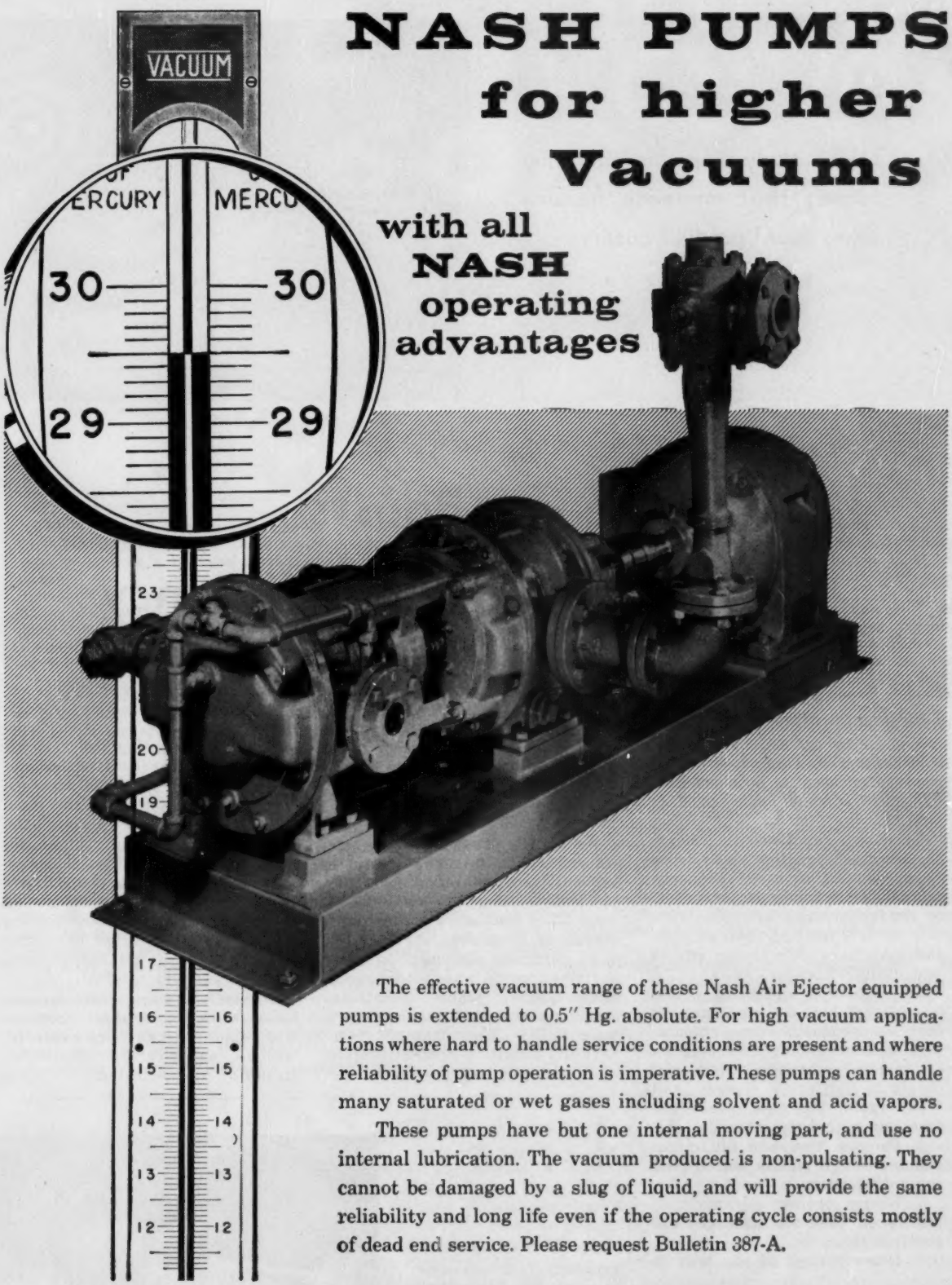

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USDA study pinpoints operating factors that minimize freezing time, guard product quality

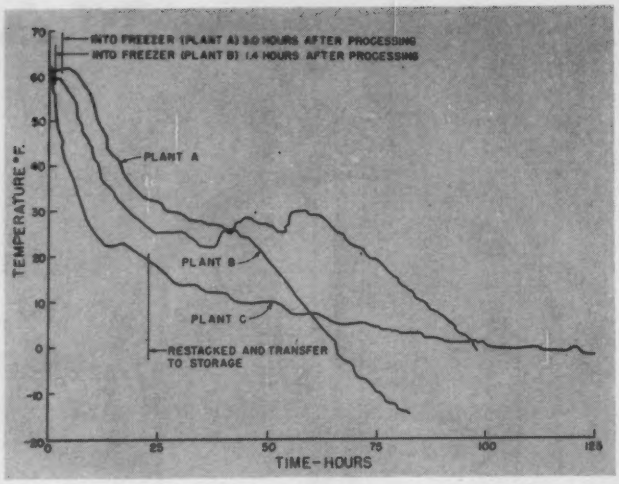


FIG. 1

Latest Research Boosts Pallet-Freezing Efficiency

PART I— Time-Temperature Data

RAPID and uniform freezing of produce is essential both for production economy and product quality.

Common practice in major strawberry-producing areas is to freeze berries in cased packages on pallets. However, large masses of product cannot be cooled rapidly by this method. Slower cooling may have deleterious effects on quality.[1, 2]

To evaluate operating techniques that have an important effect on product's time-temperature history during freezing, we conducted research in commercial plants in California, Oregon, and Washington. The data reveal that freezing operations should:

1. **Provide complete air circulation through pallets and around individual cases.**
2. **Insure proper alignment of pallets so that air passages are continuous.**
3. **Remove most of the heat in the freezer, not in dead storage.**

The above findings will be discussed here. Product-quality changes will be reported in a forthcoming Part II of this paper.

Radio Transmits Data

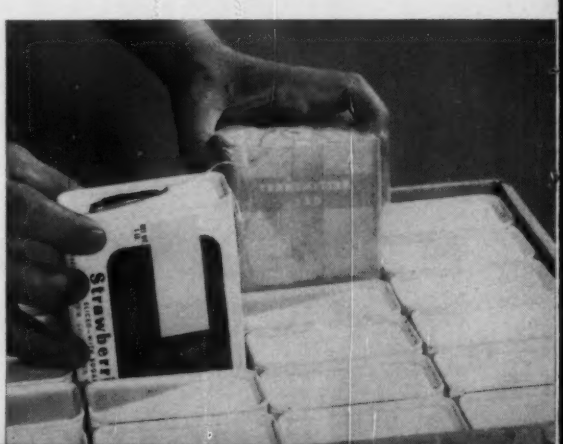
We sought product-temperature information from time of packaging until product reached zero F. or below. Thus, measurements were taken even after product was moved or re-stacked for storage.

To eliminate placement of measuring circuits and interference with normal plant operations, small portable radio transmitters were built.[3] They transmit temperature data to a remote receiver and recorder, yet are no larger than a 10-oz. strawberry carton. Center position in a case was always used.

When substituting the unit for a berry carton, the temperature-sensing probe, which is attached to the transmitter by a short flexible lead, was inserted through the top and into the center of an adjacent carton of berries.

A maximum of ten transmitters was placed in each test for an overall picture of product-cooling rates in freezers loaded to normal capacity. Slowest and fastest rates were of primary interest.

Air-velocity measurements were taken with a pin-wheel anemometer. Spot checks were made in, around, and over the particular group of pallets tested.



COMPACT radio telemeter transmits time-temperature history of strawberries during freezing. Unit's temperature-sensing probe is inserted into center of adjacent berry carton.

E. L. DURKEE, R. L. ELSKEN, and E. J. BARTA
Western Regional Research Laboratory, USDA, Albany, Calif.

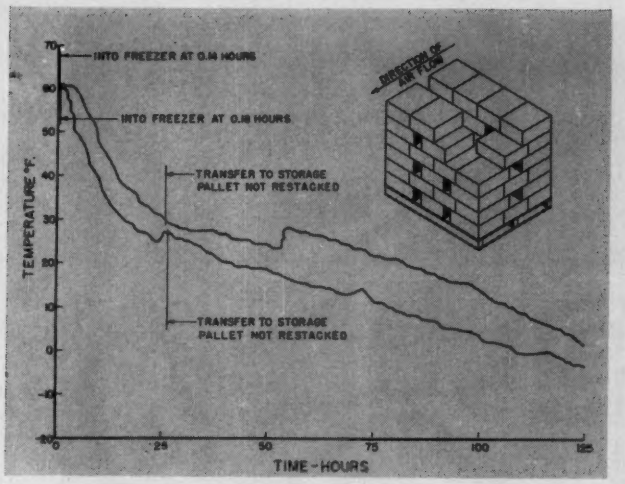

INTO FREEZER AT 0.14 HOURS
INTO FREEZER AT 0.18 HOURS
TRANSFER TO STORAGE PALLET NOT RESTACKED
TRANSFER TO STORAGE PALLET NOT RESTACKED
DIRECTION OF AIR FLOW
TEMPERATURE °F.
TIME - HOURS

FIG. 2

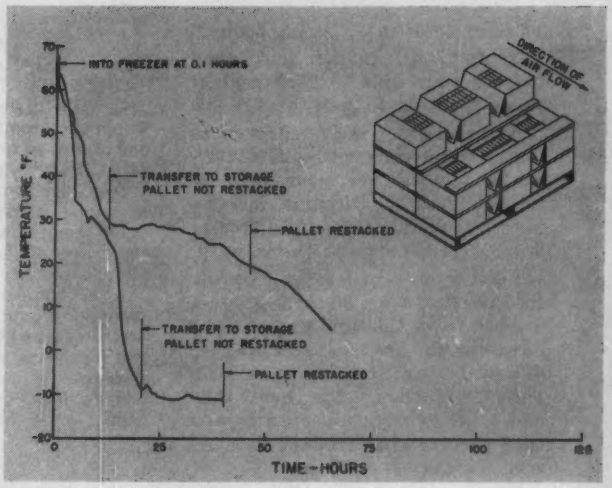


FIG. 3

How Tests Were Conducted

FIG. I shows time-temperature product histories from three sharp-freezer plants. These are examples of freezing rates of product in the most unfavorable location for heat transfer.

Curve A is the rate for the slowest sharp freezer tested. Berries were processed some distance from the freezer, and product was stacked on a loading platform for 2 hr. until a truckload had accumulated. Actual transportation time to the freezer was about 45 minutes.

Product was stacked without wood spacers, 10 cases high on 3x4 ft. pallets. Freezer room was about 100 ft. square with a 20-25 ft. ceiling. Pallets were placed in the freezer 4-5 pallets per row, with about 2 ft. between pallets and rows.

Portable fans circulated air around the product for about 24 hr. Freezer temperature averaged —10F., and the pallets were maintained one high.

Curve B represents the fastest sharp freezer tested. Packaged product was also transported to this freezer, and was re-stacked on pallets. Cases were stacked 12 high without wood spacers. Freezing room was some 75x100 ft. with 10 ft. ceiling.

A row of propeller type fans mounted on the wall about 8 ft. above floor level circulated air across the room. Pallets were located in rows about 2 ft. apart with about 1 ft. between pallets in the row. Air temperature averaged —20F.

In Plant C, product was stacked on pallets with 2x2 in. spacers, 6 spacers between layers, 10 layers per pallet. Freezing room was about 35x75 ft.

Pallets were stacked on two levels, the upper being supported on 4x4 in. cross members about 6 ft. above floor level. Several fans about 8 ft. above floor level circulated air. Average air temperature in the freezer was about—15F., in the storage room —5F. with no measurable circulation.

FIG. II shows a tunnel freezer with the slowest freezing rates tested. Upper curve represents a product in an unfavorable location for heat transfer, while the lower curve depicts a favorable location.

The processing plant was adjacent to the freezer. Cases were stacked 10 high on pallets without wood spacers. Pallets were placed in the tunnel in 3 rows of 14 pallets, 4-12 in. between rows, 2 to 3 in. between pallets in the rows. Air flow was directed at right angles to rows. A false ceiling 20 in. above tops of pallets separated return air from that through the pallets.

Average air flow through pallets was about 200 fpm. Freezer air temperatures were —20F. to —25F. Temperature in the holding room averaged —10F., with no provision for air circulation.

Fig. III shows freezing rates in one of the fastest tunnel freezers. The two curves represent product in favorable and unfavorable location for heat transfer, respectively. Processing line was adjacent to freezer. Cases were stacked with three 1x6 in. spacers between layers, 9 layers to a pallet. Cases were left unsealed with tops of cases folded open.

Freezer consisted of several adjacent tunnels, each about 8 ft. wide x 22 ft. long. Each tunnel contained two rows of six pallets with 2-6 in. between rows. Air temperature ranged —15F. to —19F.

Air flow was directed lengthwise to rows of pallets. Air velocity around rows was 1,100-2,000 fpm. There was no measurable air flow through pallets other than those at the head of rows. Air temperature in holding room averaged —10F., with air circulated by several fans along one wall. After approximately one day in holding room, cases were sealed, restacked, and placed in storage rooms.

Test Results

As shown by the graphs, a considerable range in time was required for product to reach zero F.; in some plants only 17 hr., in others, over 200. Variations within particular freezers were considerable, and attributed primarily to two generally interrelated factors: Air circulation through and around cases, and early transfer of product from freezer.

In terms of cooling time to zero F., curves for sharp freezers of Fig. I show the effects of early removal. In Plants A and B, about 75% of the total cooling time to zero F. was required to remove initial heat and latent heat of freezing. Latent heat liberation occurred during the pause in cooling between 30F. and 20F. In both freezers, product was not disturbed during the test.

In plant C, however, at near the end of the latent-heat-removal period, product was re-stacked and transferred to storage. Thus, cooling time to zero F. was considerably less than 75% completed. Had product remained undisturbed, probably no more than 30 hr. would have been required to reach zero F., rather than 102 hr.

Importance of air circulation around cases is also shown in Fig. I. Plant C used wood spacers, while Plants A and B did not. Initial cooling conditions at Plant C prior to product transfer were more favorable for rapid heat

transfer than in either A or B.

In fact, all plants that used spacers were able to cool product below freezing in less than 24 hr.

When product is transferred to storage on a time schedule, achieving a temperature near zero F. before transfer becomes increasingly important. The tunnel freezer of Fig. II illustrates this.

Even though pallets were in the freezer for over 25 hr., product in both favorable and unfavorable locations for heat transfer was removed before freezing was completed. Much of the heat then had to be removed in storage and time required for product to reach zero F. was over 100 hr.

The tunnel freezer shown in Fig. III further illustrates the effect of air circulation and early transfer of product, also the variation in cooling rates that can occur within a plant. In just 5 hr. in the freezer there was a difference of 15 deg. in product temperature at the two different locations shown.

Product in a favorable position for heat transfer reached zero F. before it was transferred, while the unfavorably positioned product did not. Despite excellent stacking, pallet alignment was such that no measurable air flow existed through them beyond the first few in the line of air flow.

Time to attain zero F. for the unfavorably located product was further prolonged because of the "last in, first out" tunnel-loading procedure used. Product was removed after only 13 hr. and before freezing was complete.

Subsequent slow cooling of this product in storage with little air circulation is graphically illustrated by the fact that 28 hr. was required for an 8-deg. drop, whereas only 17 hr. was required to go from 65F. to zero F. in the freezer.

Average time to attain zero F. was estimated at 80 hr., but could be cut to 17-20 hr. by good air circulation around cases. Moreover, such air circulation keeps product temperature fairly uniform.

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2. Guadagni, D. G., and Kelly, S. H., "Time-Temperature Tolerance of Frozen Foods." *Food Technology*, 12, 645, 1958.
3. Elskin, R. H., "Temperature Telemetry Aids Frozen Food Study." *Electronics*, 33, 129-131, Aug. 12, 1960.

The authors gratefully acknowledge the aid of E. Wolford, Fruit & Vegetable Products Laboratory, Puyallup, Wash., for advance arrangements and introductions to plant personnel for the Oregon and Washington tests.

FASTER IDENTIFICATION: New shipping carton is one of first to feature color printing and design on distinctive white outer liner, thus aiding speedier in-storage recognition of company name and product. Added strength and insulation are provided by container's meeting flaps.

Sell-Save Shipper Spurs Sales

Master carton's long-haul protection and color printing build export market for small firm

PACKAGING DOES a lot more than just protect merchandise today. It's called upon to spark impulse sales, strengthen in-store impact, enhance brand image, etc.

Now, an enterprising shrimp packer in El Salvador, Pezca, S. A., is using a specially designed master shipper to expand export sales to the U. S. Hampered by inadequate docking facilities, Pezca had to turn to air freight to push sales of his frozen shrimp in this country.

Big problem was to obtain a shipping container geared to the perishability of the firm's product. Needed was a box that would, in addition to having good insulation qualities, be moisture-proof, withstand expansion due to temperature changes, and be strong enough to hold up under the additional handling involved in air shipment.

All of these requirements—plus the added bonus of color design and printing on a clear, white outer liner—are met by a new carton developed by Union Bag-Camp Paper. The box, of center slotted construction, is waxed inside and outside, glued with a waterproof adhesive, and sized to hold ten 5-lb packages of product.

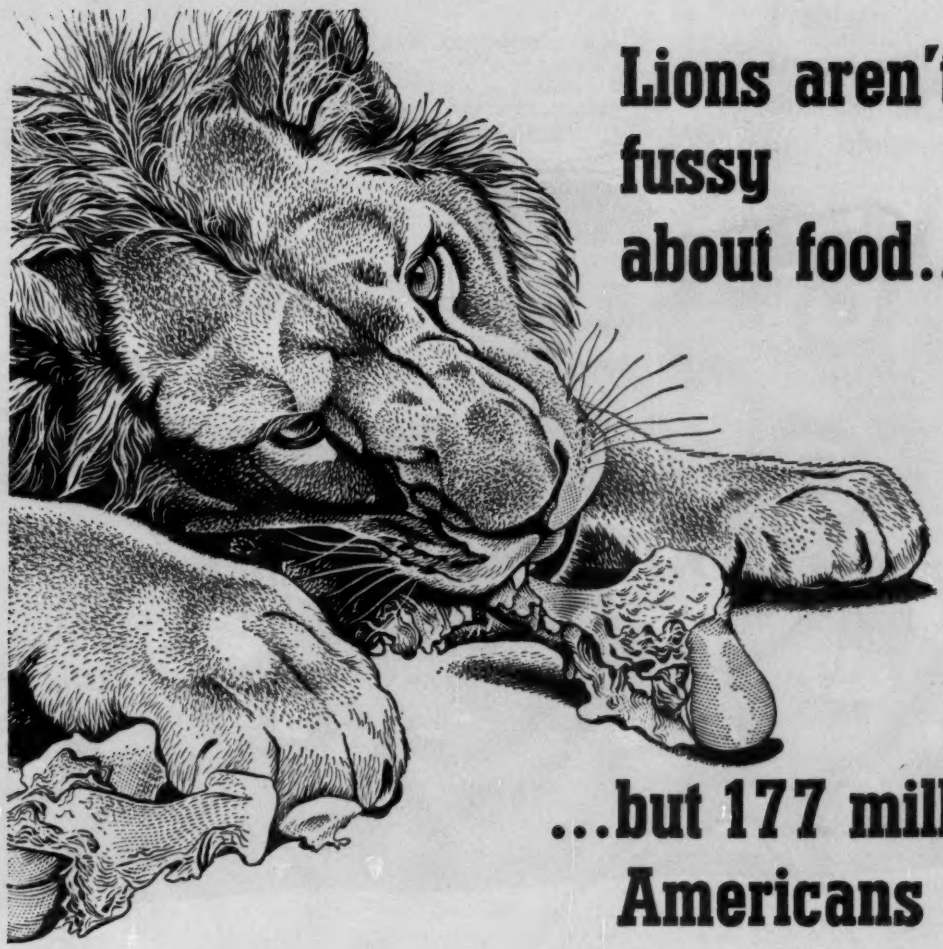
Inside and outside waxing keeps humidity from causing set-up boxes of shrimp from sticking together or to the shipper itself. The wax also helps prevent carton breakdown and keeps outer liner clean.

Because of the product's perishability, transportation calls for tight coordination. Mechanically refrigerated trucks rush the shrimp to a waiting plane just before it takes off from El Salvador to St. Petersburg. Then, soon after the plane touches down at the Florida airport, and Customs and Public Health inspectors have cleared the shipment, work crews unload the cartons directly into refrigerated trucks. At the same time, reps from Pezca's U. S. marketing agent spot-check the shrimp for temperature loss.

Fast Growth

Formed only 2 yrs. ago, Pezca now rates as one of the largest frozen shrimp producers in El Salvador. The firm's shrimp, layer-packed after machine grading for uniformity, is marketed under two labels (El Presidente and El Dorado) to U. S. institutional trade.

Over 75% of the company's production is in under-10 and 10-to-15 count shrimp, with the U. S. by far the principal market. Because only an estimated 2% of this country's domestic shrimp output comes up to this size—and with an expanding shrimp market here—Pezca feels its high-count product fills a definite need. (End)



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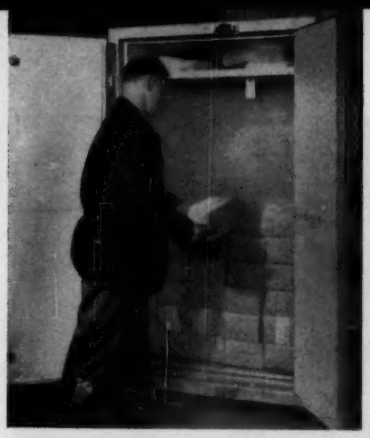

NEW CONTAINERS, insulated with urethane-foam, hold 1,500 to 1,600 lbs. of frozen food or ice cream—for very economic delivery.

Foam-Insulated Units Save in Handling Costs

Urethane provides good insulation with low maintenance costs. Frozen food handling easier, too

"THIS IS ONE OF THE BEST moves that's been made in the hauling of frozen foods in less-than-truckload quantities since frozen foods first came into existence. These boxes pay for themselves in only ten trips." Speaking is J. Tom Sanders, warehouse operations manager of Safeway's Omaha division which handles some 825,000 lbs. of frozen food and ice cream weekly for 120 stores in four states.

Mr. Sanders is speaking of the new frozen-food containers which are saving his division thousands of dollars annually.

Previous shipments were in conventional canvas containers, each holding only 75 lbs. of food. This built up labor requirements in loading and unloading. Because of deterioration caused by moisture, each bag lasted about two years. Replacement costs were running several thousand dollars annually, with an additional $5,000 for repairs. Dry ice usage per shipment was high, about $50 more than at present.

Urethane Foam Selected

Proper containerization appeared to be the answer. Therefore, experts from Sterling Refrigeration Engineering Co. were called in. They recommended a steel-framed unit of plywood, covered with glass-fiber-reinforced plastic and insulated with foamed-in-place urethane.

Semi-rigid urethane foam, made with Du Pont "Hylene" organic isocyanates and "Freon" fluorocarbon blowing agents, was selected for several reasons. Besides foam-in-place ability, foam made with these chemicals has a K-factor of only .11 to .14, about half that of other commonly used insulating materials. When foamed, it adheres firmly to the surfaces around it, adding structural rigidity and eliminating voids. Its closed-cell structure and the skin that forms during foaming prevent the absorption of moisture which decreases insulating efficiency and rots plywood.

Final Design of Unit

The final design emerged as a 600-lb. box, 6 x 4 x 3½ ft. Double doors open across the entire front for easy access and rapid loading or unloading. Because of its excellent insulating qualities, only 3 in. of urethane foam are required. Capacity is 1,500 to 1,600 lbs. of frozen food or ice cream—equal to 22 bags used formerly. A small compartment on top can hold 200 lbs. of dry ice, more than is needed to maintain proper temperature during delivery. Battens on sides and floor allow free circulation of cold air around the contents—a major improvement.

Skids on the bottom hold the cabinet above the floor to permit use of fork lift trucks in handling the container. An additional advantage is that the containers are completely sealed when closed. This means that they can be carried with any other type of cargo, even dry groceries or fresh produce. (End)

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ATI **Aseptic-Thermo Indicator Company**

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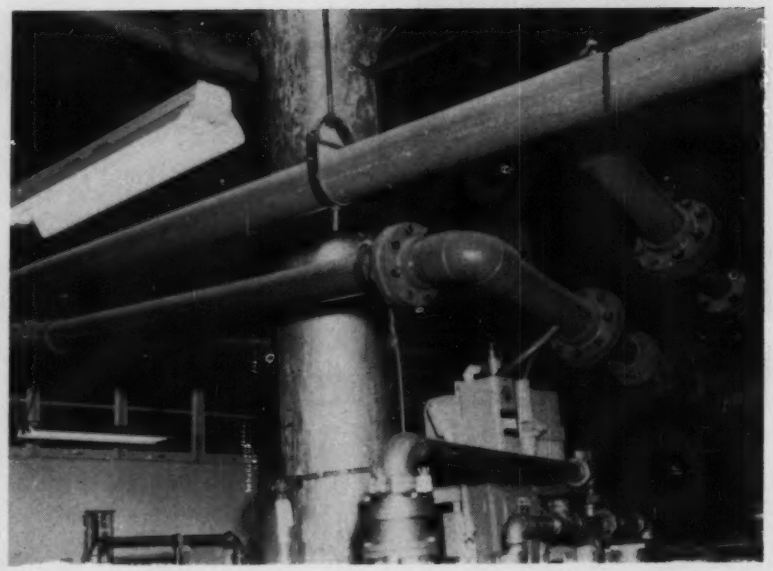

CORROSION-RESISTANT PIPE and fittings of rigid vinyl enable trouble-free mustard handling at Charles Gulden, Inc. The plastic also withstands considerable thermal shock and vibration.

Vinyl Solves Handling Problem

Immune to corrosion, rigid vinyl pipe also curbs product contamination, is easily cleaned in place

IN-PLANT PIPING of mustard was no particular problem to Charles Gulden, Inc.—until, for purposes of expansion and modernization, the company decided to move its processing facilities from New York City to Saddle Brook, N. J.

In the old plant, the mustard-piping system was of stoneware, traditional for handling highly acid or otherwise corrosive products. And it did a good job for many years, considering that mustard contains both salt and vinegar.

But in contemplating the move, it was obvious that dismantling and moving stoneware piping would be difficult and expensive. Moreover, compared with other pipe materials, stoneware has the disadvantages of being fragile, expensive, and available only in short lengths.

Thus, Gulden looked for a substitute pipe that:

1. Does not affect taste, odor, or appearance of product, and is not, in turn, corroded by the mustard in process.

2. Permits quick and easy changes in the system.

3. Withstands thermal shock and vibration.

4. Is easily cleaned in place.

The material that met all of these specifications was a rigid vinyl plastic (Geon, B. F. Goodrich Chemical Co., Arkon, Ohio). Vinyl pipe and fittings were supplied by Alpha Plastics, Inc., Livingston, N. J.

Gulden has had this system in operation for some three years, and has periodically dismantled sections of pipe for inspection. As expected, there has been no sign of corrosion or product contamination. Piping ranges 1-6 in. dia. Vinyl plug valves and diaphragm valves are used where stoneware cock valves formerly were employed.

In mustard production, seed and spices are mixed with vinegar and ground in stone mills. Finished mustard is piped to wooden storage tanks, from which it is pumped to tanks on the floor above for gravity-feed to fillers. (End)

Top Brand French Style Bean Slices come from the Urschel Model "W"

Urschel Model "W" French Style Bean Slicer

The finest, most appetizing French Style bean slices ... ready to be packed in your top-premium brand... are yours with the Urschel Model "W" Slicer, utilizing No. 4 and No. 5 sieve size pod beans.

Featured is a new feed belt designed to substantially increase the machine's capacity.

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URSCHEL LABORATORIES INC.
VALPARAISO INDIANA

Designers and manufacturers of precision, high speed cutting equipment for food products

Visit us at Urschel Booth No. 29, Conrad Hilton Hotel, Chicago, January 23-26, 1961

Men & Companies

G. H. Coppers Dies

National Biscuit Co. board chairman George H. Coppers, 58, died suddenly Dec. 28 at his home in Englewood, N. J.

Mr. Coppers had been one of the nation's outstanding business leaders and had made a distinguished record as head of one of the country's largest food companies. Named president of Nabisco in '45 and chairman in '60, he had completed 40 years of service both to the company he headed and in the fields of business and management.

Under Mr. Coppers' stewardship, Nabisco has enjoyed the greatest volume of sales in its 61 years of operation. In '46, the first full year after his election to the presidency, Nabisco sales totaled $220 million. Currently, annual sales are approaching $450 million and include the greatest tonnage of biscuits and crackers ever produced by a single company.

P. Goff Beach, Jr.

Oscar Mayer Ups Beach . . . P. Goff Beach, Jr., succeeds Gottfried O. Mayer as executive v.-p. at Oscar Mayer & Co. Mr. Mayer, who is responsible for many of the company's innovations in meat-processing machinery, package design, and marketing techniques, will continue as v.-p. and director.

Mr. Beach has been associated with OM for 25 years, starting in production work in '33. In '41 he was appointed superintendent of the Chicago plant and production superintendent in '46. He later moved up to assistant v.-p. and operations manager, and in '52 became Madison plant manager and operations manager. In '53 he was named operations v.-p. and was elected to the board the following year.

In addition, Mr. Beach is chairman of the Committee of Packing House Practice and Research of the American Meat Institute; and a director of Livestock Conservation, Inc.

Aaron Gilman

Gilman Heads Vita . . . Aaron Gilman is now president of Vita Food Products, Inc., world's largest importer, packer, and processor of fish delicacies. The former executive v.-p. succeeds Victor Heller who remains as board chairman.

Mr. Gilman started his affiliation with Vita in 1945 and became v.-p. in '48 and a director in '53. He is also v.-p. and director of Oceanic Fisheries, Seattle; Rainier Boat Co., Seattle; and Maywood Packing Co., Corning, Calif.

For several years Mr. Gilman was president of the Assn. of Smoked Fish Processors, Inc. In addition he has served as chairman of the 1959 National Fisheries Institute Convention, and chairman of the N.F.L. Smoked and Cured Fish Committee.

Personnel

J. W. Hayward, director of nutrition for Soybean Council, will represent the council at food trade fairs in London and Munich.

Harold Saving moves up to general sales manager at ReaLemon Puritan.

Richard E. Schuman heads up operations and planning in research division of A. E. Staley Co.

Edwin B. Woodworth, former v.-p. at Dole Corp., becomes national marketing v.-p. at Libby, McNeil & Libby.

Arch Clark West, former marketing director of Lever Bros. Food Div., is now marketing v.-p. at Frito Co.

A. A. Winston takes over as research manager of Perkins—S. O. S. Div. of General Foods. In other GF news, **J. Harold Wright** assumes post as transportation development manager.

Thomas H. Land moves into new position as market research manager for Birds Eye.

Dr. Eugene N. Bilenker joined Research QC group at Thomas J. Lipton, and **Dr. Norman W. Tape** and **John W. Lowry** have been added to research staff.

Theodore Phillips takes over a v.-p. post at Consolidated Foods.

Daniel J. Uhrig takes over board chairmanship at American Institute of Baking.

L. Evert Landon has been re-elected president of National Pickle Packers Assn.

Gilbert H. Hood, Jr., v.-p. at H. P. Hood & Sons, has been re-elected president of Milk Industry Foundation.

H. J. Heinz II, board chairman of H. J. Heinz Co., and **Charles G. Mortimer,** chairman of General Foods Corp., are among 33 business and industry leaders named to U. S. Advisory

Faster Freezing of Packaged Foods!
• Convenient "pass-through" operation
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• Available with or without cabinet
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Council of '61 International Industrial Conference slated for San Francisco in September.

Industry

Standard Brands, Inc., begins construction of $2,000,000 margarine manufacturing plant in Pennsauken, N. J.

Consolidated Foods Corp., Union Sugar Div., completed construction of mammoth sugar silo at Betteravia, Calif. New unit houses 40,000,000 lb. of refined bulk sugar.

Thomas J. Lipton, Inc. is expanding its laboratory and experimental kitchens at Hoboken, N. J. plant.

United Fruit Co., grower & shipper of Latin American bananas, purchased **Liana Inc.**, Texas shrimp processors. Subsidiary company, **United Fruit & Food Corp.**, is now established for directing operations of new acquisition.

Fairmont Foods Co., Omaha, Neb., and **Abbotts Dairies, Inc.**, Philadelphia, Pa., merged. Fairmont will be surviving corporation.

Sealtest Foods opened new 14 acre plant in Englewood in the Denver Metropolitan area.

Polak & Schwartz International N.V., a division of International Flavors and Fragrances will now be known as International Flavors & Fragrances I.F.F.(Nederland) N.V. Van Ameringen-Haebler and P&S merged in January '59 forming IF&F.

Chock Full O' Nuts Corp. is negotiating for purchase of instant coffee plant in conjunction with plans to introduce new premium blend of instant coffee early this year.

Associated Industries

American Can Co. has sights set on Chambersburg, Pa., as possible location of new Marathon Div. food package manufacturing plant.

Sun Chemical Corp. announced formation of new operations for production of product packaging materials—laminated and foam thermoplastic products.

Olin Mathieson Chemical Corp.'s Packaging Div. starts operations at new corrugated container plant in St. Louis.

Universal Controls, Inc., acquired Szabo Food Service, Inc., nationwide vending machine operation.

Merck & Co. is spending $2 million to double product capacity of Chemical Div.'s monosodium glutamate plant in Danville, Pa.

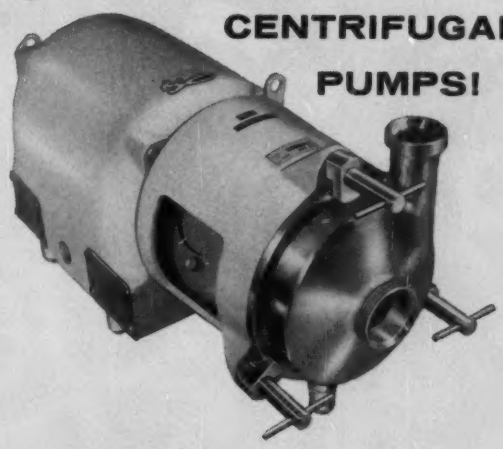
Borg-Warner Corp. plans $40 million expenditures on new plants and equipment in '61.

ADVANTAGES OF GLASS-PACKED INSTANT COFFEE are discussed by R. H. Hetzel (left), of Armstrong Cork Co., G. A. Mengle (center), of Brockway Glass Co., Inc., and R. L. Cheney, executive director of Glass Container Manufacturers Institute, during GCMI's semi-annual meeting held recently at Boca Raton, Fla.

You asked for them--

NEW HIGH HEAD VOLUME

No. 10 SANITARY CENTRIFUGAL PUMPS!



- for unloading tanks and tankers
- for circulation cleaning

Models available from 10 to 25 H.P.
Capacities to 500 gpm. Every part especially engineered for high capacity, high head pumping service.

Maximum strength and durability
Pump case machined from heavy casting of Type 316 stainless steel. No welded parts.

No leaks, less maintenance
Case is sealed with O-ring. Heavy rotary type shaft seal especially designed for high head applications.

No slip or twist
Three heavy clamps positioned 120° apart around pump periphery hold case rigidly in place under heaviest pumping torque and pressure.

Write for details and specifications

MULTI-SPEED ROTARY PUMP DRIVE

Instantly Adjustable for Timed Flow Rates

Adjustable for pump speeds through 6-to-1 speed ratio. Maximum and minimum speeds may be sealed for pasteurizer timing. Designed especially for CP Stainless Rotary Pumps.

Write for complete details.

THE *Creamery Package* MFG. COMPANY
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CREAMERY PACKAGE MFG. CO. OF CANADA, LTD.
267 King Street, West • Toronto 2B, Ontario

Hot bread cools off on Koroseal

FRESH-FROM-THE-OVEN BREAD, still hot from baking at 450 degrees, cools off as it travels by conveyor to wrapping tables. The conveyor belts previously used were made of canvas. But oily film clinging to the warm loaves stained and darkened canvas, made it almost impossible to clean, finally wore it out.

Then B.F.Goodrich introduced a new, improved belt for food handling —a belt made of Koroseal flexible material. Koroseal defies the things that ruin other conveyor belts—oil, grease, animal fats, most acids. It resists cracking and peeling, never gets soft and sticky. Koroseal doesn't absorb odors from food, has no odor or taste itself to transfer to food.

The bakery owner liked what he heard about Koroseal, decided to give it a try. That was April, 1954. Today, the same belt is still going strong, has already outlasted the life of two canvas belts.

Food particles and oil can't grind or soak into Koroseal's smooth, polished surface. That's why it can be thoroughly cleaned in just a fraction of the time it took to scour the old belts. Even scuff marks from banging pans wipe right off with a damp cloth.

B.F.Goodrich was the first company in the rubber industry to have its conveyor belts found suitable by the Food and Drug Administration for safe food handling under the new Food Additives amendment. For more information, call a BFG distributor, or write *B.F. Goodrich Industrial Products Co., Dept. M-952, Akron 18, Ohio.*

Koroseal—T. M. Reg. U. S. Pat. Off.

B.F.Goodrich

CONVEYOR BELTS

FE SERVICE CENTER

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Advertisers Index ..... p. 107
Classified ..... p. 108
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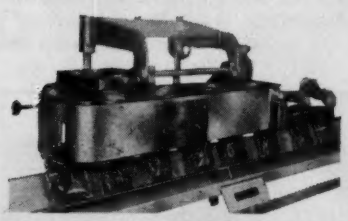
NEW EQUIPMENT & SUPPLIES

Film Converts Carriers For Food Hauling

A low-cost vinyl film now converts any truck bed, rail car, or ship's hold into a sanitary container for foods. Film meets FDA standards.

Most promising application is quick and economical converting of standard, non-food carrying units of common carriers for bulk handling of edibles and liquids. Another use is as a cover in outside bulk storage of wheat and fruit, where temporary protection against weather and contamination is required. Film is available in thicknesses of 3/16 mils, and in widths from 36-72 in.—*Goodyear Tire & Rubber Co., Akron, Ohio.*

Circle 251 on Reader Service Card



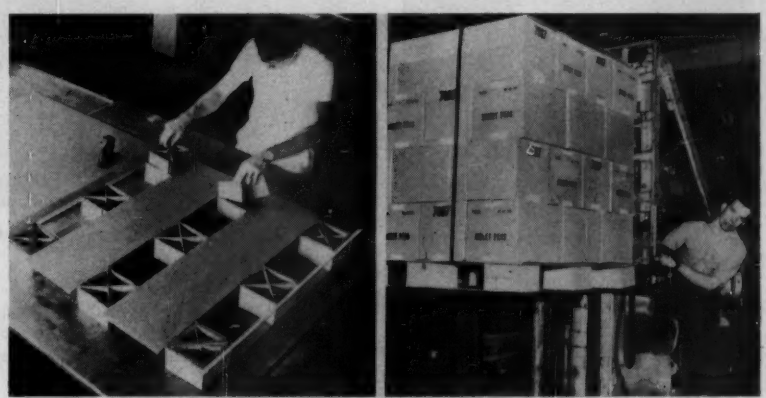
Trims, Seals Poly Bags

Efficient, high-speed trimming and sealing of polyethylene bags is offered by this compact rotary unit.

Known as Cut-off Sealer, it heat-seals the bag, automatically trims off up to 4¾ in. of excess bag top, and ejects or 'conveys-out' the excess. Bags may be fed into machine at any angle. Undercarriage guards cover belts and pulleys when under part of sealer is exposed to operators.

Unit has variable-speed drive ranging 315-995 in. per min., electric-eye safety device, and reset button for restarting. Dimensions: 48x21x9½ in., exclusive of floor stand.—*Pack-Rite Machines, Milwaukee.*

Circle 252 on Reader Service Card



LIGHTWEIGHT PALLET saves shipping and storage costs. Quickly assembled from one piece of corrugated board (left), it is strapped to load (right).

Expendable Pallet Takes 10,000-Lb. Load

Strapped loads—up to 10,000 lb. —may be easily and economically transported with this lightweight corrugated pallet.

Called Econo-Pal, it weighs only 3-4 lb., depending upon size. Unit is shipped to users and stored by them in flat-sheet form, which saves both shipping costs and storage space. Ten such pallets in flat form fit into the space required by a single conventional wooden pallet.

One man using a staple gun assembles the new pallet in a few minutes by folding and stapling the die-cut and scored sheet. Or an assembly jig is available which enables two workers to put a pallet together in about 4 min.

Nine types of corrugated pallet leg inserts provide added strength and meet various compression strength requirements. Leg inserts, also formed from flat sheets, slide into place and lock firm without gluing. Fastening of a top deck to the pallet by stapler completes the assembly.

Pallet-leg design permits easy four-way entry by fork trucks. Units are available in 10 standard sizes.—*Packaging Corp. of America, Evanston, Ill.*

Circle 253 on Reader Service Card

Foamed Insulation Cuts Truck-Refrigeration Cost

Near 100% thermal efficiency in insulation of refrigerated trucks is reported for a new panel of rigid foamed polyurethane with waterproofed plywood face and an aluminum foil back.

Called Insulation Panel, product cuts required insulation space, is lightweight and structurally strong, reduces installation time, and has life expectancy exceeding that of truck or trailer. Panels interlock for airtight construction, the key to thermal efficiency.

In a test with a standard mechanical refrigeration unit in a 35-ft. empty trailer, temperature was reduced to −30 F. in 2 hr. while outside temperature was 89 F. Temperature was down to zero in 36 min. When installed correctly,

panels insure conformance with the AFDOUS Code.

Standard panels are made 4x7 ft. and 4x8 ft. in either 3¾ in. or 5¾ in. thicknesses. — *Urefoam Corp., Camden, N. J.*

Circle 254 on Reader Service Card

Light Bulk-Milk Container Cuts Costs, Saves Space

These disposable containers for dispensed dairy products reportedly cut bulk-packaging costs and up milk-plant efficiency.

Cylindrical unit consists of multiple layers of container-board for strength and moisture resistance. A sterile plastic-film bag attached to container top holds the dispensed product. Containers are available in 3, 5, and 6-gal. capacities. An empty 5-gal. container weighs 14 lb. less than a conventional 5-gal. metal can, thus offers easier handling.

Containers are delivered flat for storage economy at the dairy. When emptied by user, they are easily knocked-down and discarded. —*Weyerhaeuser Co., Plastics Dept., Beverly, N. J.*

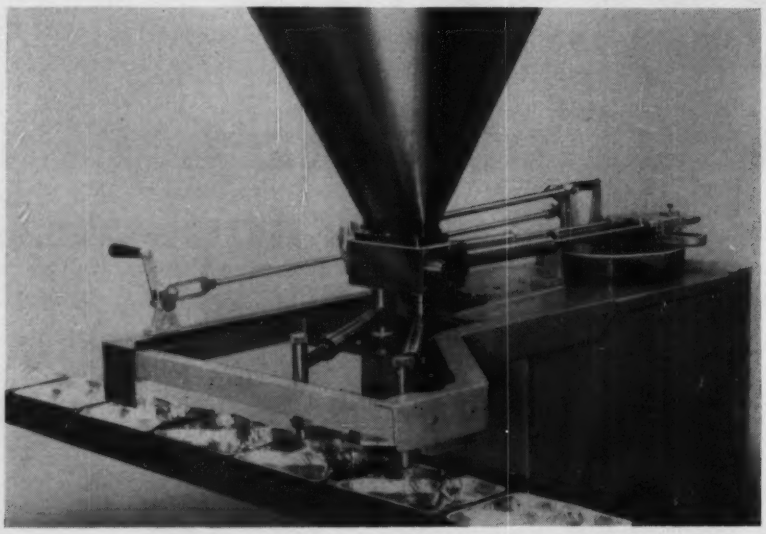
Circle 255 on Reader Service Card

FE Annual

Editorial Index

available upon request

at 35¢ per copy.



Semi-Solids Filler Handles Two Trays Per Cycle

Designed for filling moving containers, this piston unit offers hand lever shut-off, interchangeable cylinders, and container-height adjustment.

Called TS, it is driven from customer's conveyor drive so that filler is synchronized with containers, which are spaced according to conveyor chain's lug spacing. Standard unit has two spouts 10 in. apart. It fills two trays accurately with one cycle of the pistons, placing product in any given position on tray. All product-handling parts are of stainless steel, including the 40-gal. cone-shaped receiving hopper.

Capacity ranges 20-40 fills per min. of semi-solids, such as mashed potatoes, chicken and meat dishes, chow mein, etc. Containers handled include aluminum trays and tubs, cartons, dishes, and plastic open-top containers. Floor space: About 40x60 in.—*F. L. Burt Co., San Francisco.*

Circle 256 on Reader Service Card

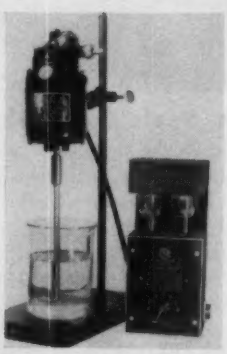
High-Efficiency Filter

Micronic filtering of a variety of fluids is provided by a new disposable filter cartridge.

Employing a separate filtering medium interwoven between a structural spiral winding, unit (Micro-Wynd) traps progressively finer contaminant particles from outside diameter to core to maintain a consistent flow rate with minimum risk of loading. Cartridge ends are wound square with core axis so any number of cartridges can be assembled end-to-end in tiered arrangements without sealing devices, when inserted in a suitable filter housing.

Units are available with cellulose winding yarn, cotton fiber filtering medium, and metal cores. Standard dimensions are 1 in. core x 2½ in. o.d. x 9⅞ in. overall length.—*Cuno Engineering Corp., Meriden, Conn.*

Circle 257 on Reader Service Card



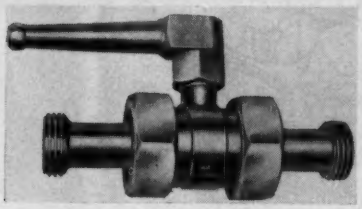
Electronically Controlled For Uniform Mixing

This laboratory mixer is electronically controlled to provide constant torque with stepless variable d.c. speeds from a.c. lines.

Called Lab Mixer, it uses thyratron tubes to convert power for constant torque as mix viscosity changes. Variable, reversible motor

has direct and gear drive. Armature shaft speed is 0-500 rpm, gear shaft 18:1 ratio.—*Gerald K. Heller Co., Las Vegas, Nev.*

Circle 258 on Reader Service Card



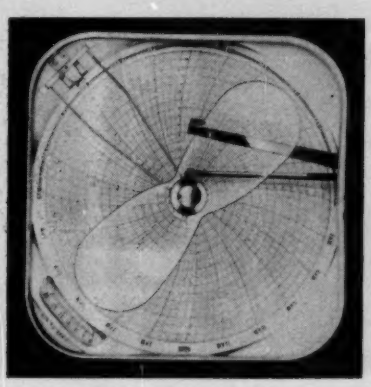
Sanitary Ball Valve

Designed to meet rigid sanitary codes, this stainless-steel ball valve can be cleaned "on stream," or rapidly disassembled for additional cleaning.

Designated #8207, its interchangeable union end connections permit quick application in present process systems. Absence of internal threads or crevices curbs entrapment of solids. A heavy-duty stem and rectangular slotted key in the ball provide positive rotation, eliminates ball wobble, also ball and stem wear.

Valve is available in 1, 1½, and 2-in. sizes with 150-lb. working pressure at 400F. It has Teflon seat rings, neoprene quad ring packing, nylon thrust washers, and polished aluminum handle. All other parts are of stainless. — *Cooper Alloy Corp., Hillside, N. J.*

Circle 259 on Reader Service Card



Recorder-Controller In Single Case

Incorporating the recorder and controller of this time-program unit into a single case cuts panel-space requirements 50%.

Recorder chart and program cam are independently driven, which enables recording repetitions of the program on a single chart. Program time may be from 30 min. to 30 days. Various models measure and control temperature, pressure, flow (mercury manometer or bellows-differential meter), liquid level, and humidity.

Either pneumatic or electronic control is offered. Pneumatic control can be "on-off", proportional, or reset type. An external manual-automatic station is also available. —*Bristol Co., Waterbury, Conn.*

Circle 260 on Reader Service Card

For Palletless Handling

Here's a new fork-truck attachment for palletless handling of unit loads of cartons. It's termed particularly suited for handling bulky but relatively light loads.

Called Carton-Pac, attachment handles loads supported by a corrugated sheet scored to fit around bottom of load and overhang on two special forks. Channel-shaped sheet is held against sides of base cartons by string tie. Truck consists of side-shifting clamp, load back rest, pair of special load carrying forks (2 in. thick x 46 in. long), double auxiliary valve, and hose-line adaptation kit.

A set of offset forks adapt the machine for maker's trucks already equipped with side shifter clasp attachment. — *Clark Equipment Co., Battle Creek, Mich.*

Circle 261 on Reader Service Card

Gages Sp. Gr. In-Stream

A new system for continuous, in-process measurement of specific gravity operates without radioactive devices or complex mechanical transducers. Designed for use with a wide variety of liquids, its output signals can be used for indication, recording, or control purposes.

In operation, a flexure-mounted pneumatic weight transmitter coupled with a special stainless steel tank, continuously weighs a constant volume of slurry or liquid. Since weight of the constant volume is directly proportional to specific gravity, readout is directly in specific-gravity units.

Volume is kept constant by one of two methods. If material contains air, a probe and air vent valve maintain liquid level by venting top of tank. Liquids which do not contain entrained or dissolved air can be measured in a simpler, open-top, overflow tank. In both tank designs, turbulence can be introduced by baffles to keep materials in suspension.

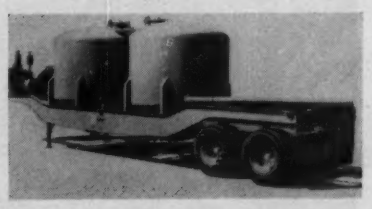
System is accurate to 0.25% overall, and gives repeatability of 1 part in 2000.—*Weighing and Controls, Inc., Industrial Park, Hatboro, Pa.*

Circle 262 on Reader Service Card

Bulk Pneumatic Trailer Cuts Unloading Time

Unloading time for dry bulk materials may be cut in half with use of this new twin-tank unit.

The self-unloading trailer (Jet-



25) uses a new pneumatic principle —low air volume at high pressure —to compact the flowing material. Result is discharge rates up to 4,000 lb. per min. through a 4-in. pipe. Unit's clean bore vessels are quickly and easily cleaned between product changes.

Trailer handles granular as well as powdered materials.—*Heil Co., Milwaukee.*

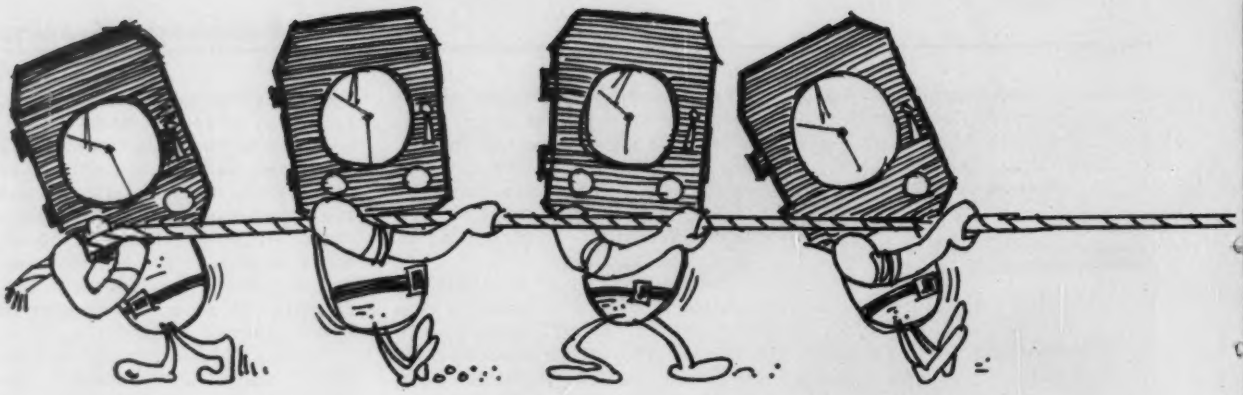
Circle 263 on Reader Service Card

Compact Centrifugals

Compactness and quiet operation are features of a new series of 1,750-rpm. centrifugal pumps.

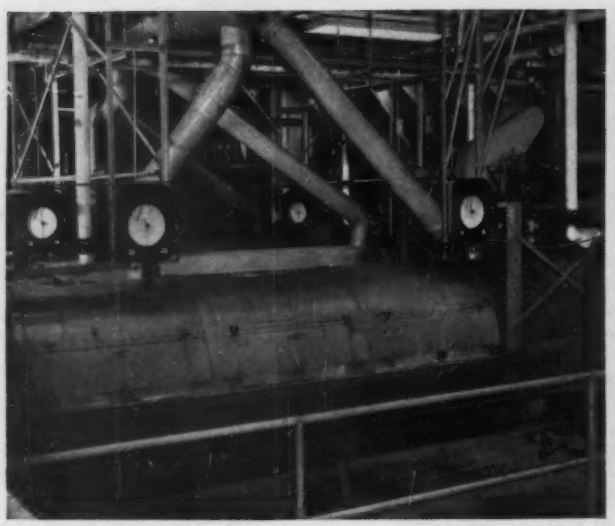
Called 1750K-Line Motorpumps, they are termed particularly suited

(Continued on Page 100)



Let *Taylor* help you hold the line on costs...

BLANCHING



Dual Blancher control system. Taylor controllers and valves maintain exact temperature throughout the entire blanching operation by controlling it at both inlet and outlet ends. This insures firmness, color and texture in the finished product.

RETORTING

Taylor SPW-7AV fully automatic Retort Control System regulates temperatures throughout the pre-heat, cooking and cooling periods and times the entire cycle. There are a variety of Taylor Control Systems to modernize your present equipment.

Taylor Instruments

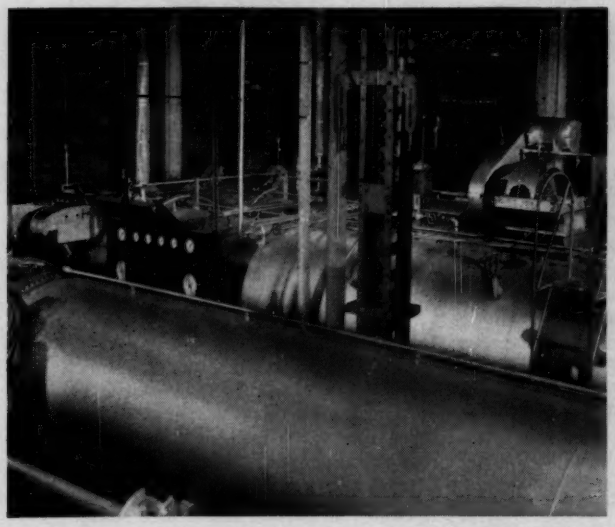
. . . And a Taylor control system will help you hold the line on profits too, because it will assure you of a uniformly high quality product.

Whatever your control needs are, from simple regulation of hot water temperature to the most complete continuous processing control, there's a Taylor system designed for the job—and proven on the job.

When you specify Taylor you're buying not only the most dependably accurate instrumentation, you're getting the benefit of years of experience in serving all facets of the food processing industry. Just call your Taylor Field Engineer, or write for **Catalog 500.** Taylor Instrument Companies, Rochester, New York, or Toronto, Ontario.

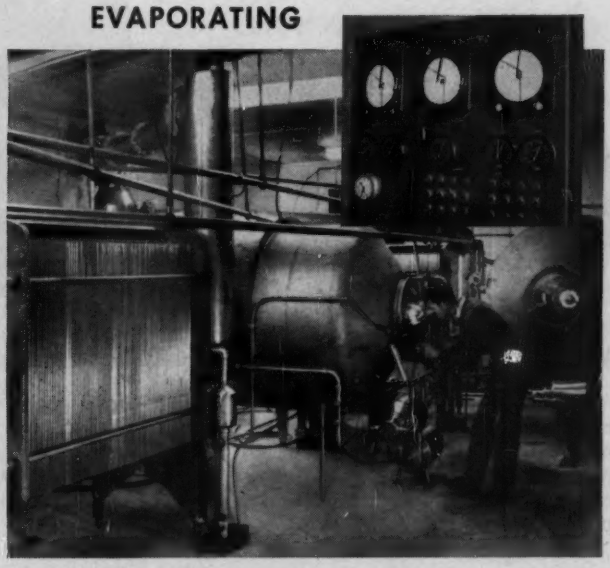
Be sure to visit the Taylor Booth (No. 2) at the Canners' Show

CONTINUOUS STERILIZING



Continuous Cooker and Cooler Lines under Taylor control. With this modern continuous sterilization method precise temperature control is all-important. Taylor controls help insure the maximum possible return on your equipment.

EVAPORATING



Double-effect plate evaporator in use on citrus concentrate. Taylor control system regulates juice temperatures and provides accurate records of vapor temperatures. Whatever method of evaporating you use, there is a Taylor System to keep it operating at top efficiency.

MEAN ACCURACY FIRST

for air conditioning, heating, and processing operations. Pumping rates range 15-500 gpm., with heads to 110 ft. Ball bearing motors

¾-7½ hp. are available in drip-proof or totally-enclosed construction. Sizes range 18⅜-24¾ in. long and 11 3/16-15 11/16 in. wide.

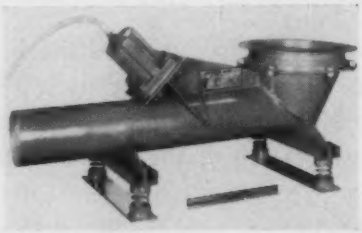
Pump can be mounted at any angle and on its side, provided motor is kept higher than the pump. — *Ingersoll-Rand Co., New York City.*

Circle 264 on Reader Service Card

Sanitary Vibro-Conveyor

For contamination-free conveying of bulk products, this unit employs an air-powered drive that vibrates the totally-enclosed aluminum conveyor.

Flow is started and stopped by a quick-acting valve. Rate of flow is regulated by adjusting the air-supply pressure, which may range 10-100 psi. Four coil springs provide support and isolate vibration from surrounding structures. Entire unit may be cleaned with



common cleansers.

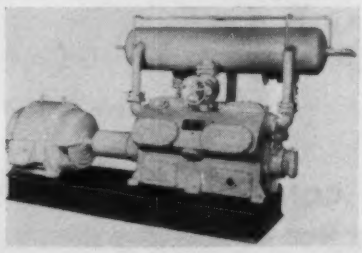
Known as Vibrating Conveyor, unit handles pellets with density of 65 lb. per cu. ft. at 20 tons per hr. Conveyors up to 20 ft. long may be powered by a single vibrator. —*Cleveland Vibrator Co., Cleveland.*

Circle 266 on Reader Service Card

Saves Cost, Space

Where cost or floor limitation precludes use of individual booster and high-stage compressors in low-temperature refrigeration, this 12-cylinder two-stage compressor offers an ideal solution.

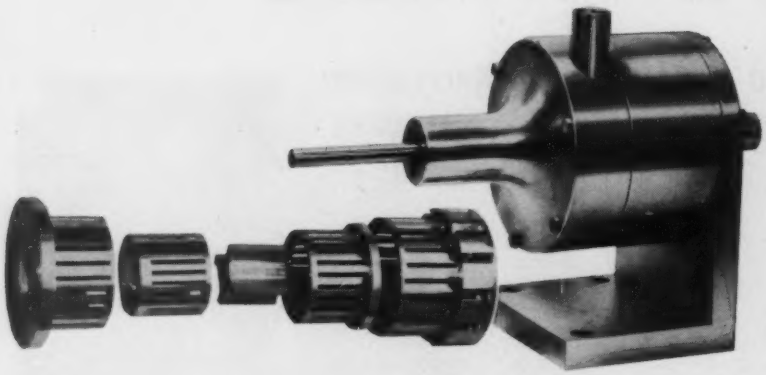
Known as VMC, unit may be driven directly or with V-belt, and operates with ammonia or Refrigerant 12 and 22. Partitions within the frame provide separate booster and high-stage sections. Center cylinder bank and one outside bank are low pressure, the other side bank is high pressure.



A 16-in.-dia. intercooler provides subcooling and desuperheating.

Additional features: Removeable cast alloy iron cylinder liners for replacement ease, spring-loaded safety heads, and optional 50% unloading and capacity reduction. — *Vilter Mfg. Co., Milwaukee.*

Circle 267 on Reader Service Card



Versatile Mixing Pump Offers Continuous Operation

Designed for continuous-flow mixing, blending, and emulsifying of a wide variety of products, this pump offers high operating efficiency, sanitary design, and easy maintenance.

Called Shear Pump, it handles wet or dry products, or a combination of both. Capacities range 5 gpm. for a laboratory model to 200 gpm. for production types. A minimum of 750,000 cuts per min. provides continuous operation. Pump cannot overwork the products once its setting is determined, and centrifugal pumping action develops suction lift and discharge head.

Unit consists of a number of rotors and stators that may be varied in any combination depending on product requirements. There is no aeration of product, although it can be provided if desired, and product heat gain is negligible. Controlled 'dwell time' for particle-size uniformity is achieved by a control valve on pump's outlet line.

Maker offers various rotor types in single-, double-, or triple-stage units operable at variable speeds. They may be cleaned-in-place and quickly disassembled for fast, easy maintenance.—*Hobam Inc., Buffalo, N. Y.*

Circle 265 on Reader Service Card

New Truck-Axle Line

Increased carrying capacity, simplified design, and standardization of components are features of a truck line with three new through-drive tandem rear axles.

Differential carrier on both axles is centered so axle shafts are same length. This also provides more efficient drive angles and cuts wear on connecting parts.

Units are offered in rated capacities of 30,000, 34,000, and 38,000 lb. Steel-spring or rubber-load-cushion suspension models are available. Lightweight components include spring saddles and walking beams. Axles will be offered with a

100,000-mi. or 1-yr. warranty.— *International Harvester Co., Chicago.*

Circle 268 on Reader Service Card

Chain Has Forged Links

Here's a new chain-link design for conveyors that reportedly ups chain life and strength at no extra cost.

Chain pins are made of same alloy steel as the links and are forged right into them. Thus, pins can't fall out. Moreover, their greater strength is said to make the chain virtually maintenance free.—*Kropp Forge Co., 5301 W. Roosevelt Rd., Chicago.*

Circle 269 on Reader Service Card

BRIEFS

Fruit and Berry Feeder continuously feeds up to 10,000 lb. per hr. with accuracy of ±1% of full-scale capacity. Controls actuated by position of weigh beam automatically maintain pre-set feed rate. Scale unit employs feeder and troughed conveyor belt.—Thayer Scale Corp., Pembroke, Mass.

Circle 270 on Reader Service Card

Barrel Cart has dual safety brakes to eliminate hazard of moving heavy drums down steep inclines. Slight pressure on brake lever gives operator complete control. Unit (Model 600) is available in steel or aluminum.—Valley Craft Products, Inc., 750 Jefferson, Lake City, Minn.

Circle 271 on Reader Service Card

Egg-Carton Overwrapper, handling waxed paper and most heat-seal films or foils, offers superior product protection, easier handling, and merchandising advantage. Unit is readily incorporated into sizing and grading lines, permits quick change from one preprinted film to another, employs electric-eye registration, and provides for carton dating and grade printing.—Hayssen Mfg. Co., Sheboygan, Wis.

Circle 272 on Reader Service Card

NEW SUPPLIES

Crystalline Cleanser and disinfectant incorporates wetting agent for faster action. Product (Diversol CX) dissolves instantly, releasing bactericidal chlorine. — Diversey Corp., Chicago.

Circle 273 on Reader Service Card

Diatomite Filter Aid, with flow rate nearly double that of conventional materials, enables filtration of highly viscous liquids. Called Celite 560, it is shipped in 50-lb. bags.—Johns-Manville, N.Y.C.

Circle 274 on Reader Service Card

INGREDIENTS

Hydroxypropyl Methylcellulose (Methocel HG) has FDA approval for use in all foods except confections and standardized products. A supplementary regulation extends coverage to standardized salad and French dressings. Product acts as thickener, emulsifier, stabilizer, foamer, and moisture-retainer.—Dow Chemical Co., Midland, Mich.

Circle 275 on Reader Service Card

High-Protein Soy Flour offers economical food enrichment. Product (Ardex 550) is 50-55% protein, imparts no taste or odor of its own, and can be given any desired flavor. Typical applications: Enhancing nutritive value, 'freshness,' and crust color of baked goods; also used in dry baking mixes. — Archer-Daniels-Midland Co., 700 Investors Bldg., Minneapolis.

Circle 276 on Reader Service Card

Natural Fermentation Flavor eliminates time-consuming dough fermentation, instantly imparts yeast-leavened flavor and aroma to a wide variety of chemically leavened baked goods. Termed especially effective in combination with the blander leavening agents (CDL, SAS, etc.), product (Vico 400) is highly stable and easily handled.—Vico Products Co., Chicago.

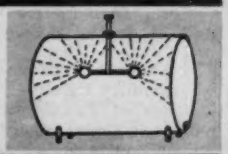
Circle 277 on Reader Service Card

New Cleaning Techniques Save Time – Cut Costs

Processing Vats—in-place spray cleaning or portable units for batteries of similar vats.

KLENZADE MODERN

Storage Tanks — complete systems for pipeline cleaning and in-place spray cleaning.



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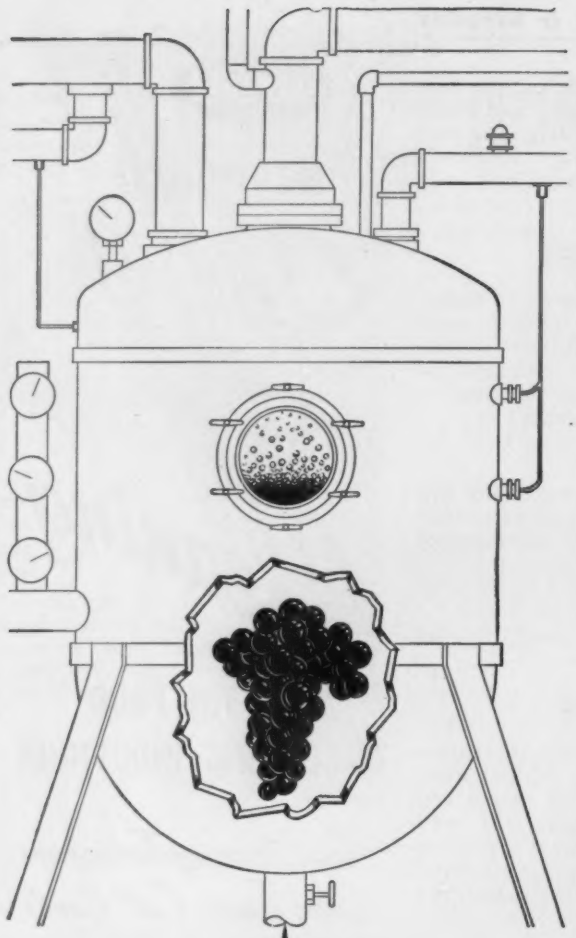

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Just Off the Press

PLANT ENGINEERING

Air Heaters. Two brochures give specs and applications of electric, gas, and oil-fired models. 4p.—Despatch Oven Co., Minneapolis, Minn. (301)

Teflon Coated Tools. Provides information on properties and applications of product's anti-sticking and chemically resistant qualities. 4p.—Cadillac Plastic & Chemical Co., Detroit, Mich. (302)

Tubing Steels. Cross-indexed data folder shows chemical analysis of standard carbon, alloy, and stainless types. 6p.—Babcock & Wilcox Co., Beaver Falls, Pa. (303)

Pump Construction. Details metering pump components. 4p.—Clark-Cooper Co., Palmyra, N. J. (304)

Compressors. Details new outdoor models for cost-saving, flexible operation. 4p.—Kramer Trenton Co., Trenton, N. J. (305)

Clamps & Couplings. Catalogs complete line of available types including flanges and v-band joints. 44p.—Aeroquip Corp., Los Angeles, Calif. (306)

Sanitary Fixtures. Introduces dust and moisture resistant lighting unit especially designed for food plant operation. 1p.—The Miller Co., Meriden, Conn. (307)

Heating Specialties. Details and illustrates firm's complete line. 12p.—Sarco Co., N.Y.C. (309)

PACKAGING

Packaging Machinery. Contains specs, features, and illustrations of firm's complete line. 4p.—Food Machinery & Chemical Corp., Philadelphia, Pa. (346)

Film Grade Resins. Product data guide outlines range of conventional and high-density polyethylene. 12p.—Rexall Chemical Co., Paramus, N. J. (347)

Cellophane. Gives specs and applications of multiple packaging with flexible, transparent materials. 16p.—American Viscose Corp., Philadelphia. (348)

Overwrap Machinery. Spec sheet describes nine new units for use with polyethylene. 4p.—Battle Creek Packaging Machines, Inc., Battle Creek, Mich. (349)

Sealing Tips. Folder designed to help industries concerned with packaging and shipping in corrugated cartons. — Bostitch, Inc., East Greenwich, R. I. (351)

MATERIALS HANDLING

Overhead Equipment. Provides up-to-date information on carriers, cranes, tractors, track switches, grabs, etc. 11p.—Cleveland Crane & Engineering Co., Wickliffe, O. (361)

Truck Selection. Provides ready reference for everyday handling problems including consequences of mis-applied truck selection. 8p.—Automatic Transportation Co., Chicago, Ill. (362)

Conveyors. Covers five types of horizontal power units including specs and illustrations. 7p.—Rapids-Standard Co., Grand Rapids, Mich. (363)

Case Packers. Describes continuous motion units including illustrations and specs. 6p.—Geo. J. Meyer Manufacturing Co., Milwaukee. (364)

Hand Trucks. Details firm's new two-wheel line. 5p.—Harper Trucks, Inc., Wichita, Kan. (366)

Bucket Conveyor. Details unit combined with vibrating feeder which allows constant rate feeding of materials. 8p. — Conveyor Corp., St. Clair Shores, Mich. (370)

Vane Feeder Valves. Details new heavy duty pressure tight units. 2p. —

Sprout - Waldron, Muncy, Pa. (374)

PROCESSING

Fluid Processing. Explains "Fluidics"—science of fluid processes, and details specialized materials and equipment for handling liquids and gases. 16p.—Pfaudler Permutit, Inc., Rochester, N. Y. (333)

Pumping Scale. Illustrates and describes unit for artery or stitch pumping of hams, briskets, and other meat products. 4p.—Calgon Co., Pittsburgh. (334)

Dehydrators. Outlines unit which removes moisture from air breathed into liquid storage tanks, thus preventing dilution or contamination of tank products. 6p.—Johnson & Jennings Co., Chicago. (335)

Sifter. Provides information on unit adaptable to separating and classifying all types of dry materials. 4p.—Sprout, Waldron & Co., Inc., Muncy, Pa. (336)

Mixers. Describes new series of top-entering, solid drive shaft units, designed for use in closed tanks. 4p.—Mixing Equipment Co., Inc., Rochester, N. Y. (337)

Processing Equipment. Illustrates and describes firm's line via photograph, drawings, and diagrams. 16p.—Edw. Renneburg & Sons Co., Baltimore, Md. (339)

SANITATION & MAINTENANCE

Incinerators. Describes complete line of smokeless-odorless units for heavy-duty use. 4p.—Winnen Incinerator Co., Bedford, O. (352)

Vacuum Cleaner. Details portable unit designed to handle radioactive and toxic dusts. 4p.—Cambridge Filter Corp., Syracuse, New York. (353)

Ultrasonic Cleaning. Comprehensive description of new system with emphasis on its industrial application.—Powerton Ultrasonics Corp., Garden City, N. Y. (354)

Insect Control. Introduces new electronic panels for effective control of flies and other insects. 7p.—Gardner International Corp., Pompano Beach, Fla. (355)

Automation Cleaning. Schematic layouts and cycle diagrams describe basic factors of time, temperature, detergency, and physical action in new cleaning method. 6p.—Klenzade Products, Inc., Beloit, Wis. (356)

Cleaners & Detergents. Gives data, trade names, manufacturers, and alkalinity ratings of products used on glass - lined brewery tanks. 4p.—A. O. Smith Corp., Milwaukee. (357)

Metal Parts Cleaner. Provides specs and applications of new unit for removal of encrusted carbon, weld oxides, brazing flux, varnish and paint. 2p.—PALL Corp., Glen Cove, N. Y. (358)

Distillery Sanitation. Describes and illustrates equipment designed for cleaning tank interiors and exteriors, and for cleaning equipment in place. 4p.—Oakite Products, Inc., NYC. (359)

INSTRUMENTS

Lab Glassware. Details new items in firm's line including complete range of boiling and distilling flasks. 108p.—Kimble Glass Co., Toledo, O. (381)

Switches. Describes and illustrates "adjustable pulse," "center neutral limit," and "proximity" units. 4p.—Micro Switch, Freeport, Ill. (383)

Receiver Gauges. Gives illustrations and specs of complete line of dial indicating units. 8p.—U. S. Gauge, Sellersville, Pa. (384)

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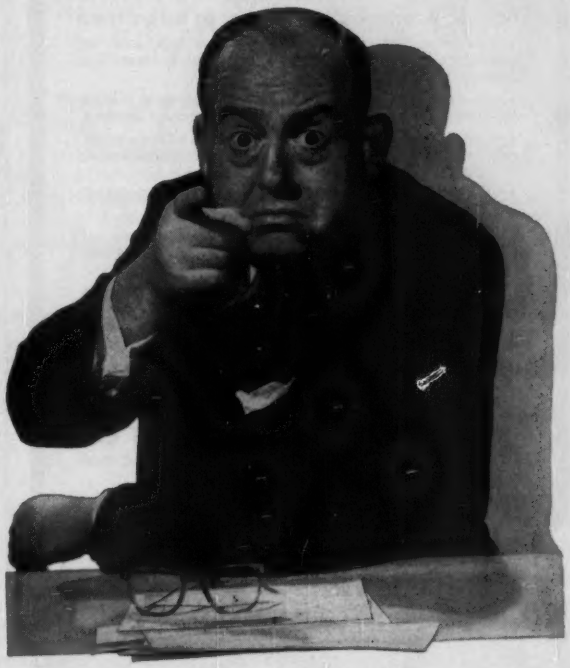

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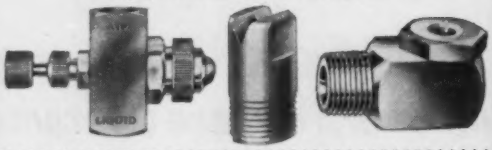

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electronic units for use in pulse and digital systems to eliminate spurious voltage pulses. 2p. — Minneapolis-Honeywell, Freeport, Ill. (389)

MANAGEMENT

Plant Layout Models. Explains how 3-D approach helps planning staff better understand facility requirements, and more thoroughly evaluate proposed ideas for new plants or expansion of present operations. Includes layout kit containing 187 items for testing this engineering tool. 12p.—"Visual" Plant Layouts, Oakmont, Pa. (390)

Cut Handling Cost. For each of 18 ways to cut materials handling costs, photographs of actual application with information on equipment used is included. Problems considered include positioning of goods for order selection, handling of materials on pallets, moving of goods between floors, and accumulation of cartons on conveyor line. 4p.—Rapids-Standard Co., Inc., Grand Rapids, Mich. (391)

Safety Training. Introduces low-cost safety training course for industrial foreman consisting of six booklets entitled "Men & Motives in Safety Supervision," and manual for discussion group leaders. Course offers practical instruction on ways foreman can better understand his men and work with them. National Safety Council, Chicago. (392)

Trace Analysis Service. Describes organization primarily organized to help food industry cope with urgent problems posed by recent FDA food additive regulations, including a practical approach to complex problems in product and quality control. 4p.—Evans Research & Development Corp., NYC. (393)

MARKETING

Southern Markets. Contains information on growing Southern market and on Atlanta, its chief trading and industrial center. Index outlines subject matter under 50 main headings. 40p.—Industrial Bureau of the Atlanta Chamber of Commerce, Atlanta, Ga. (394)

Market News Service. Report describes nation-wide, Federal-State agency that collects and disseminates detailed information on prices, movement, and supplies of farm products at central markets and major food distribution centers, in addition to collecting production area market news on sales at farms, ranches, direct buying stations, livestock auctions, and local shipping points. 62p.—U. S. Dept. of Agriculture, Washington, D. C. (395)

Candy Market. Report details consumer expenditures, manufacturers, outlets, candy consumption, and seasonal trends in addition to specific consideration of boxed candy, frozen candy, packaged candy, and candy bars. Also attempts to answer question "Why Do People Buy Candy?" Special attention is given to advertising and the outlook for candy market. 13p.—Curtis Publishing Co., Philadelphia. (396)

Sales Forecasting. Details new method of sales controls for more accurate prediction of short-range sales and profits. System cuts paperwork and red tape for company marketing execs as well as salesmen. 4p.—Werner Assoc., NYC. (397)

Grocery Distribution. Product survey shows which brands were handled by which chains, how many brands were found in only one market, and how many were found in two markets up to and including the number found in all ten markets tabulated. 4718 different brands in 71 classifications are listed with only 9% found in all ten markets tabulated. 3p. — Scripps-Howard Newspapers, NYC. (398)

Farm Market. This latest in a series of farm market studies states that farm market spends $26 billion a year on production goods and services and another $160 million for consumer goods. Tells how advertiser can reach this growing market area. 31p.—Wildrick & Miller, Inc., NYC. (399)

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Trademark Selection

TRADEMARK SELECTION. *U. S. Trademark Assn., 6 East 45th Street, NYC 17. 1960. 92p. Price: $2.00.*

Trademarks, as important sales tools, are considered here from legal, marketing, advertising, and public relations standpoints. This book contains a verbatum account of how two groups of management men and consultants used the "management team" method in choosing a trademark for a new consumer product. It brings to light all of the problems faced and their solutions.

The book is indexed and contains a word list of trademarks and trade names.

Booklets and Reports

FOOD FOR SPACE TRAVEL. *Armed Forces Technical Information Agency, Arlington Hall Station, Arlington 12, Va. 1960. 64p.* Shows present state of progress and our capabilities in nutrition and food technology for manned space flight.

U. S. GOVT. PURCHASING, SPECIFICATIONS AND SALES DIRECTORY. *Govt. Printing Office, Washington 25, D. C. 1960. Price: 60¢.* Lists addresses of major military and civilian purchasing offices.

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Dried Extract of Mucilage-Producing Portion of Okra Pods That's Used As an Antioxidant.—L. R. B. Hervey, John A. Manning Paper Co., Inc., Troy, N. Y. No. 2,950,975.

Fibrous Meat-Like Food Produced From Protein Fiber-Spinning Dope. — A. S. Szczesniak, General Foods Corp., White Plains, N. Y. No. 2,952,543.

Nut-Like Food Comprising Hydratable Film-Forming Component in Dried Cellular Phase and Water-Immiscible Liquid Dispersed in Discontinuous Phase.—J. R. Durst, The Pillsbury Co., Minneapolis. No. 2,952,544.

Baking Aid for Flours Consisting of Fluffy Calcium Phosphate Particles To Which Are Bonded a Glyceride Baking Aid. — O. Pfrengle, Budenheim (Rhine), Germany. No. 2,-952,545.

Hop-Flavoring Material With Lupulin Dissolved in Solvent and Protected by Antioxidant. — A. Fonyo, Wm. J. Stange Co., Chicago. No. 2,952,546.

Oxidant-Free Flour With Improved Baking Properties That Contains Added Calcium Hydroxylapatite. — O. Pfrengle, Budenheim (Rhine), Germany. No. 2,-952,549.

Food Coating Comprising Gelatin and Meta Phosphoric Acid Polymer in Acidic Solution.—H. L. Keil, Armour & Co., Chicago. No. 2,953,462.

Culinary Mix for Reconstituting Into Batter for Baked Goods Comprising Flour, Leavening Agent and Dried Emulsion.—C. C. Elsesser, General Foods, Corp., White Plains, N. Y. No. 2,954,297.

Nut-Flavoring Additives Consisting of Nut Butter Containing Aqueous Solution of a Polyhydric Alcohol. — F. L. Avera, Corn Products Co., Chicago. No. 2,955,040.

PROCESSING

Frozen Egg Product Made by Mixing and Chilling Whites and Yolks, Freezing Eggs in Carton and Slicing Carton and Frozen Eggs.—F. L. Long, Sterling, Ill. No. 2,952,551.

Producing Stable Meat Product by Comminuting and Rendering Meat and Incorporating Antioxidant in Rendered Meat When Fat Portion's in Liquid State.—H. R. Ansel, Wm. J. Stange Co., Chicago. No. 2,952,552.

Water-Soluble Protein Concentrate by Water Extracting, Acid Hydrolysing and Partial Drying.—H. Mohler, Zurich, Switzerland. No. 2,-953,456.

Coated Food Particle Manufactured by Vacuum Spraying, Vacuum Heating, Spraying Edible Coating Material on Particles and Again Vacuum Heating. — F. L. Sanna, Sanna Dairies, Inc., Madison, Wis. No. 2,-953,457.

Modifying Powdered Milk Products by Coating Particles With an Anhydrous, Liquid Surface Active Agent.—A. Sjollema, Leeuwarden, Netherlands. No. 2,953,458.

Making Bread Dough Continuously by Pre-Mixing and Advancing Dough Through Confined Region.—J. C. Baker, Baker Process Co., Belleville, N. J. No. 2,953,460.

Partially Cooking Comminuted Meat Flowing Through Smooth Elongated Passage to Convert It Into Self-Sustaining Mass.—J. J. Prohaska, La Grange, Ill. No. 2,953,461.

PACKAGING

Package Consisting of Pair of Telescoped Foil Tray Sections Capable of Expanding When Subjected to Heat.—D. L. Watson, Minneapolis. No. 2,948,624.

Multiple Container Package With Holder-Carrier Device Secured to Each Container. —J. V. Fisher, Los Angeles. No. 2, 949,183.

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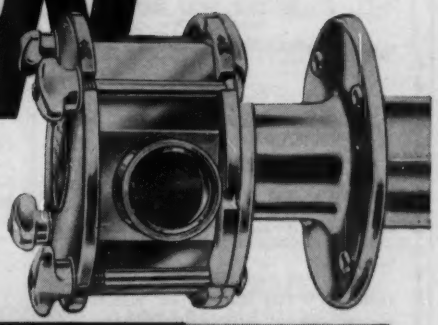

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Quality Restaurant Suppliers, Inc.
100 Page Street, Marshall, Michigan
Story 1-3989 for more information.

Wanted

VOTATOR WANTED
State age, capacity and price.
STUART HALE CO.
2529 N. PULASKI ROAD
CHICAGO 39, ILL.

WANTED
Model HG84 Stokes & Smith Duplex Filler. Contact—
Lewis Research Labs, Inc.
202 South Dean Street
Englewood, N. J.

WANTED
Large quantities of glass jars, capacity 8 ozs. to 25 ozs. any finish except C. T. Prices must be about 50% under list. Quantities 5000 cases or more per item.
FRUITCREST CORP.
109 So. 6 St., Brooklyn 11, N. Y.

Employment

HELP WANTED

DIRECTOR-RESEARCH
SOUTH AMERICA

Large international meat processing company looking for Food Technologist or Chemist Ph.D. with research experience in the meat industry, plus executive ability to manage Food Research and Development Laboratory in Buenos Aires, Argentina. Salary open. Send resume.
BOX FE-43
c/o FOOD ENGINEERING, Chestnut at 56th, Phila. 39

POSITION AVAILABLE

Production Manager for one of the larger Bakery Supply houses. Should be familiar with fruit preserving, pectin, starches, water soluble gums and fats and oils.
BOX FE-44
c/o FOOD ENGINEERING, Chestnut at 56th, Phila. 39.

SITUATION WANTED

MAN EXPERIENCED all phases production desires Plant Manager or Production Management position. Age 41. BOX FE-40, c/o FOOD ENGINEERING, Chestnut at 56th, Phila. 39.

Professional Services

FOOD DEVELOPMENT LABORATORY
S. W. ARENSON, *Director*
Ingredient evaluation • New Products development
Specializing in flour shortenings, milk and other basic ingredients • • Facilities, chemicals and physical laboratory, bakery, spray dryer and other unit process equipment.
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BIOLOGICAL RESEARCH and APPLIED CHEMISTRY
• Pharmacology • Toxicology • Microbiology
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HAZLETON LABORATORIES, INC.
P.O. Box 30, Falls Church, Va.
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LEWIN ASSOCIATES
Consultants
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SCHWARZ LABORATORIES, Inc.
Consultation on Food Problems
Analyses of Foods and Beverages
Food Plant Design and Process Improvement
Research and Investigations
Legal Testimony
Write for bulletin describing facilities and services
230 Washington St., Mount Vernon, N. Y.
Phone: MO 4-1100 Cable: Swaknip

ENGINEERING REPORTS
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CONSTRUCTION MANAGEMENT
CHAS. T. MAIN, INC.
Consulting Engineers
Boston, Mass. Charlotte, North Carolina

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29 West 15th Street, New York 11, New York
WAtkins 4-8800, Direct Dialing Area 212
Baltimore, Md. Bainbridge, N. Y.
MEMBER: AMERICAN COUNCIL OF INDEPENDENT LABORATORIES

STRASBURGER & SIEGEL, INC.
Chemists—Bacteriologists—Food Technologists
Specialists in Canned and Glassed Foods Laboratory Services
Testing Tomato Products, Mayonnaise, Pickles, Oils, Fats, Beverages, Sugars, Filth in Foods, Food and Drug Libels, Expert Testimony
1408 Eutaw Place, Baltimore 17, Maryland

Ingredients for The Food Processor

Carrot Oil Makes Food Golden Yellow
Like butter, carrot oil contains natural carotene—not synthetic. Used for vitaminizing food products where a yellow color is desired. No fishy odor or taste. Send for catalog and sample.
NUTRITIONAL RESEARCH ASSOCIATES
205 Broad St., So. Whitley, Ind. Phone 100

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REPRINTS AVAILABLE

Here is a partial list of stories that have appeared in recent issues of FE which, because of wide reader interest in the subject, have been reprinted.

Address requests to Reprint Editor, FOOD ENGINEERING, Chestnut & 56th Streets, Philadelphia 39, Pa.

Sharper Additive Check, June 1960.

Weighing Makes Big Strides by John V. Ziemba, March 1960.

Broad-Gage Supervisor Training Boosts Selling 5 Ways by T. C. Taylor, September 1958.

Selling Approach: Key to Winning Shelf Space in the Chains by C. R. Havighorst, March 1958.

Putting the Sweet Smell of Success into Sales Promotions by Jerry Keefe, January 1960.

Packaging Check List, July 1957.

How to Build Facts into Profits by Thayer C. Taylor, March 1960.

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